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JANUARY, 1893

Annals of Horticulture In North America

FOR THE YEAR 1892

A WITNESS OF PASSING EVENTS AND A
RECORD OF PROGRESS

By

L. H. BAILEY

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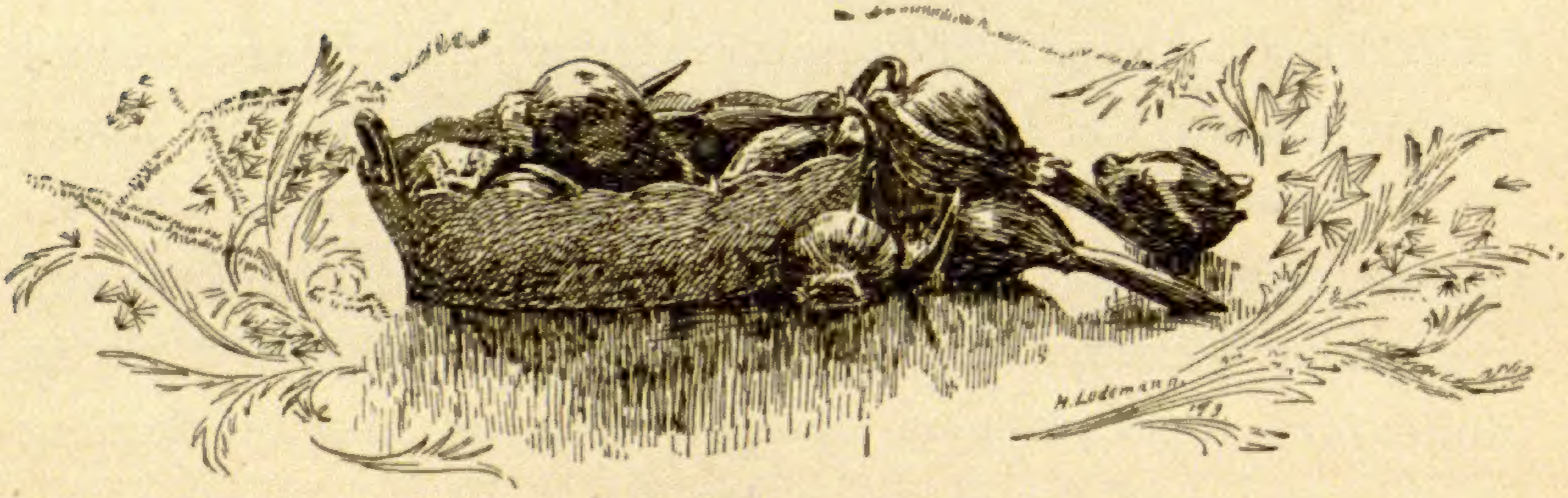
PREFACE.

HORTICULTURE has not yet attained to the dignity of a science in North America. The experiences and records of the past have not been collated, and studied collectively. The conclusions which we have drawn from previous generations are largely dogmatic and very often random; and we are constantly exaggerating the importance of present events and minimizing those of the past. Perhaps the chief reason for this condition is the absence of any continuous record or repository of horticultural progress, for advancement is necessarily slow when important facts are continually lost to coming generations. All this is equivalent to saying that there has been no general desire for a horticultural literature, for a living demand would have produced the history. Even at the present day, under the stimulus of agricultural teaching, the experiment stations and the rural press, there is no spontaneous demand for any continuous record. But the future will surely hold us in unpleasant remembrance if something of our quickening life is not saved for maturer study.

The rapid growth of our horticultural industries has emphasized empirical knowledge, and has obscured all that fertile study of the history of the subject which alone is capable of drawing bold and safe conclusions for the future. The commercial aspects of horticulture can be adequately understood and their tendencies determined only through a study of past developments ; and whatever scientific deductions are to be drawn for our guidance in the increasing competitions and complexities of the time must be made in the full light of the evolution of cultivated plants. The time has come when philosophical and reflective study of horticulture is needed ; yet the energies of even our students of horticulture seem to be directed almost wholly to the immediate and so-called practical problems, most of which, at best, are temporary.

L. H. BAILEY.

ITHACA, N. Y.



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PART I.

GENERAL ANNALS.

§ 1. *FRUITS AND VEGETABLES.*

The year 1892 was distinguished in general by light crops of fruits. It was a marked contrast to 1891, when the crops were almost uniformly fair to very good. The determining causes of the failures of 1892 are perhaps largely attributable to the weather. Late frosts cut off the peach crop in most parts of the Delaware and Chesapeake peninsula, and the early season in most of the Eastern states was excessively wet, with drouth following at midsummer. The heavy rain-fall delayed planting and orchard operations, and discouraged the applications of insecticidal and fungicidal sprays. It also no doubt greatly encouraged the incursions of fungi, which were for the most part serious, especially in apple orchards. There were apparently comparatively few serious extended ravages by insect pests. The year.

The apple crop of 1892 was very poor and small, as a whole. The spread of leaf-blight early in the season was perhaps the most serious cause of the shortage. The condition which was present in the great orchards of western New York in 1890* was wide spread in 1892. The foliage early in the season began to show a tendency to remain small and to curl, and it was marked by a brownish burnt appearance, which could be distinguished at some distance. In many orchards Apple crop.

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* Annals for 1890, 8.

in the middle states and westward, scarcely any healthy growth was made until near midsummer, when late rains freshened it. This serious leaf-blight appears to be directly responsible for the death of many of the flowers and young fruits. It is evidently caused most largely by the apple-scab fungus (*Fusicladium dendriticum*), although other fungi are possibly concerned in it. This form of the scourge comes on so early in the season, and runs a devastating course so quickly, that little has yet been done to stay its progress. The ordinary apple-scab injury upon foliage and fruit, which progresses somewhat slowly throughout the season, is readily held in check—as the experiments of 1892 again show—by sprays of copper compounds. If the blight which dissipates the crop while yet in flower is amenable to the same treatment, we have still another emphasis given to the importance of very early spraying—a conclusion to which experiments point with renewed force every year. But whatever the exact cause of this rapid blight of the apple, it is evidently greatly influenced by the weather of spring. The two seasons in which it has attracted most attention were marked by prolonged and heavy cold rains at about the blossoming time and extending some days beyond it. This blight was much less serious in New York than in 1890, but in Michigan and west to Kansas it was very severe.

Apple blight.

The western apple states—Missouri, Kansas and adjacent regions—experienced almost a total failure of apples. The older apple regions of southern Michigan were equally barren, but the northern section, in the neighborhood of Traverse Bay, on Lake Michigan, gave a good crop, both in quality and quantity. In New York and Ohio the crop was considerable, and in some sections it was good. The Hudson river region, for instance, had a good crop, but it was used mostly for export and therefore made little impression upon the domestic markets. In other New England states the crop was fair, and much of it found its way to the west. Even Maine apples were shipped west, but the results were commonly unsatisfactory, for prices were not sufficient to cover the great cost of handling and transportation. The Canadian crop was good, and was largely consumed in the export trade. The estimated percentages of the apple crop in various states for September and November, as compared with an average full crop, pub-

Distribution of the crops.

lished by the statistician of the Department of Agriculture, are as follows :

Estimates of apple crop.

States.	*Sept. 1.*	*Nov. 1.*	*States.*	*Sept. 1.*	*Nov. 1.*
Maine	75	83	West Virginia	38	35
New Hampshire	85	89	Kentucky	64	50
Vermont	75	75	Ohio	25	25
Massachusetts	69	75	Michigan	45	40
Rhode Island	60	65	Indiana	25	21
Connecticut	60	55	Illinois	22	19
New York	64	64	Wisconsin	59	60
New Jersey	51	58	Minnesota	65	70
Pennsylvania	54	55	Iowa	45	50
Delaware	48	20	Missouri	39	28
Maryland	32	30	Kansas	30	25
Virginia	39	36	Nebraska	25	30
N. Carolina	58	54	Colorado	67	70
S. Carolina	73	65	New Mexico	95	85
Georgia	70	75	Utah	73	70
Alabama	86	83	Nevada	65	
Mississippi	70	70	Idaho	91	
Louisiana	73	75	Washington	70	65
Texas	64	55	Oregon	65	60
Arkansas	62	56	California	81	75
Tennessee	57	55			

These figures average much lower than similar ones made for the crop of 1891*, although the crop for that year was not heavy. It will be seen that with the comparatively unimportant exception of Idaho, none of the estimates reach 90 per cent. of an average full crop. Notwithstanding the very short crop, the exportation to England did not fall very far under that of 1891, although the Canadian crop helped largely to keep up the foreign consignments. The apple exports from all ports to all ports for the season ending Dec. 31st, 1892, were as follows :

Apple exports.

	LIVERPOOL.	LONDON.	GLASGOW	VARIOUS.
	Bbls.	Bbls.	Bbls.	Bbls.
New York, Boston, Montreal, etc.	585,168	114,832	192,921	9,723
To same date last year	646,874	116,832	236,421	18,952

Being 902,644 bbls. in 1892, against 1,010,079 in 1891.

The prices were below those of 1891, however, and many exporters lost heavily. This condition was owing in part, perhaps, to the inferior quality of the apples. The early apples were also held back for better prices, and arrived in market in poor condition. Many varieties which should have been exported in October were held until November. Fall Pippin and Twenty Ounce were among them. Because of duty regulations, Canadian apples were shipped by Canadian ports more exclusively than formerly. There appears to be a decided drop in the popularity abroad of the Newtown Pippin. This is due primarily to the popularizing of other apples in England, and it has no doubt been hastened by the substitution of Peck Pleasant and other green apples for the Newtown. The acreage of Newtown Pippin cultivation is also lessening, due to the encroachments of cities upon the available lands laong the Hudson, the disappearance of the old families and dying out of old orchards, and possibly, also, to the serious incursions of scab. Although nearly every export consignment of apples goes to Great Britain, the continental markets take our apples from the English. The time cannot be far distant when large shipments will be made directly to the continent. During the year, one of the NewYork exporters received a cablegram order from Berlin for 1,000 barrels of Baldwin.

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* Annals for 1891, 9.

Apples abroad.

The apple crop of England was light, as was also that of France, Holland and Germany. Belgium had a fair crop, as did Denmark, from which the Gravensteins come in competition wtih the early winter American apples in the English markets.

Foreign apple crop.

The American apple territory is constantly widening. The crops of Missouri, Kansas, Iowa and other western states are now very important factors in the apple movements of the country. There are undoubtedly large regions still farther west which are capable of growing the apple to perfection. Parts of northern California already grow good apples in considerable quantity, and Oregon, Washington and British Columbia are planting them to an increasing extent*. Oregon early began to grow apples, and when the mining fever of California was at its hight, apple growing there was as profitable as gold mining. In 1854 some 500 bushels of apples are said to have been shipped from Oregon to California, and returned

Western apple regions

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* See Annals for 1890 28. Annals for 1891, 37.

a net profit as high as $2 per pound. In 1855 about 6,000 bushels were shipped, and they sold for $20 to $30 per bushel. After 1860 the orchards of California began to bear, and shipments from the north declined.

Peach crop.

Peaches were killed by late frosts in large areas of the Atlantic coast, and the Michigan crop was very light. In Delaware and Maryland the crop was almost an utter failure. The crop in southern Illinois was also very small. California, Georgia and Florida produced a fair crop. The following estimates for September 1 are those compiled by the statistician of the Department of Agriculture, the figures representing the proportion of an average full crop:

New Hampshire	85	Georgia	86	Michigan	65
Massachusetts	77	Florida	77	Indiana	48
Connecticut	80	Alabama	87	Illinois	27
New York	40	Mississippi	60	Missouri	29
New Jersey	50	Louisiana	41	Colorado	53
Pennsylvania	40	Texas	58	New Mexico	82
Delaware	15	Arkansas	45	Nevada	35
Maryland	20	Tennessee	35	Idaho	70
Virginia	30	West Virginia	44	Washington	80
N. Carolina	50	Kentucky	56	Oregon	80
S. Carolina	72	Ohio	25	California	75

Pear crop.

The *Pear crop* was better than the apples and peaches, yet it nowhere reached a full crop over any extended geographical region. The estimates of the Department of Agriculture for November 1 are as follows:

Maine	94	N. Carolina	51	Michigan	75
New Hampshire	90	S. Carolina	70	Indiana	50
Vermont	79	Georgia	70	Illinois	40
Massachusetts	75	Florida	75	Wisconsin	70
Rhode Island	90	Alabama	73	Missouri	40
Connecticut	78	Mississippi	65	Kansas	25
New York	65	Texas	61	Colorado	70
New Jersey	84	Arkansas	45	New Mexico	83
Pennsylvania	64	Tennessee	50	Utah	50
Delaware	45	West Virginia	42	Washington	80
Maryland	32	Kentucky	46	Oregon	60
Virginia	35	Ohio	56	California	80

Plum crop.

Plums and other orchard fruits probably averaged nearly as low as the apple crop. The plum crop of New York, which is the most important plum section east of the Rocky Mountains, was mostly large, although serious incursions of the black-knot have decimated the industry in the Hudson river valley. The Japanese plums are now beginning to make some impression upon the market. It is found that some of the varieties are adapted to a wide range of territory, even as far north as New York and New England. The Chinese *Prunus Simonii* grown in California has made remarkable sales in the eastern markets, although this fruit has not been profitable for cultivation in the east. The native plums, the product of several species, are rapidly becoming staple fruits in some markets, and some of them are found to be adapted to canning on a large scale. Plum growing is now more diverse in its species and varieties than any other American fruit industry.

Various plums

Prunes.

Prunes in California were a short crop, probably not exceeeing one-half of the anticipated crop when the trees were in bloom. Lack of moisture appears to have been one of the causes of the failure. It is expected that the final figures of the crop of 1892 will not greatly exceed 20,000,000 pounds. This is considerably less than the crop of 1891, notwithstanding the larger acreage which is constantly coming into bearing. The crops of cured prunes in California for six years are as follows:

1887	5,825,000 lbs.	1890	16,000,000 lbs.
1888	8,050,000 "	1891	27,500,000 "
1889	17,000,000 "	1892 probably . .	20,000,000 "

The importation of foreign prunes into the United States shows a decline, no doubt mostly due to the competition of the California product:

Imported in 1887 . .	92,032,625 lbs.	Imported in 1890 . .	58,093,410 lbs.
" 1888 . .	70,626,027 "	" 1891 . .	9,336,859 "
" 1889 . .	46,154,825 "		

Oranges and lemons

Oranges and lemons. The orange crop for the season of 1892-3 is about the same as of 1891-2, although more trees had reached bearing age. The orange crop of 1891-2 was nearly 5,000,000 boxes, of which about 3,500,000 came from Florida. Florida will market about 3,000,000 boxes this year, California 1,500,000, and Louisiana about 500,000, making in all about 5,000,000 boxes. The crop of southern California, as estimated at midwinter 1892-3 by the Santa Fé railroad—evidently including lemons—is as follows:

From the Riverside district, 660,000 boxes; San Diego, 30,000; Santa Anita, 77,500; Azusa 19,400; Covina, 40,750;

Duarte, 46,250; Etiwanda, 3,000; Glendora, 7,560; Highland, 18,925; Lamanda, 82,000; Monrovia, 8,540; North Cucamonga, 3,070; North Ontario, 59,475; North Pomona, 45,150; Redlands, 53,280; Pasadena, 50,500; Rivera, 51,575; Whittier, 3,000; Downey, 11,600; Santa Fé Springs, 3,500; Los Nietos, 500; Fullerton, 3,130; Anaheim, 53,975; Santa Ana, Orange, McPherson and Tustin territory, 182,760; Los Angeles and Vernondale district, 188,350; Inglewood, 12,000; Glendale, 51,800. According to these figures, the whole crop would reach 1,677,050 boxes, or say 5,800 carloads.

Orange area of California.

The California State Board of Horticulture finds that 38 of the 54 counties grow oranges, and nearly as many grow lemons. The board makes the following estimates of the acreage of the state for 1892:

COUNTIES.	No ORANGE TREES.	No LEMON TREES.	COUNTIES.	No. ORANGE TREES.	No. LEMON TREES.
Alameda	2,599	1,147	Sacramento	13,610	1,142
Amador	116	52	San Bernardino	2,286,200	18,000
Butte	119,012	1,762	San Diego	204,026	65,922
Calaveras	230	218	San Joaquin	2,752	87
Colusa	6,923	99	San Luis Obispo	5,800	2,550
Contra Costa	398	258	San Mateo	470	50
El Dorado	284	295	Santa Barbara	44,200	13,150
Fresno	5,941	1,380	Santa Clara	1,335	331
Kern	1,277	640	Santa Cruz	216	128
Lake	361		Sierra	199	44
Los Angeles	987,102	76,927	Solano	3,417	404
Marin	248	16	Sonoma	3,185	1,095
Mariposa	173	133	Stanislaus	17,796	568
Merced	950	635	Sutter	3,497	152
Monterey	221	14	Tehama	1,246	218
Napa	1,375	63	Tulare	3,330	1,885
Nevada	300		Ventura	63,700	36,727
Orange	141,029	25,066	Yolo	1,341	523
Placer	11,535	1,895	Yuba	21,159	327

The total number of orange trees set in orchards in California is therefore 3,957,453, of which 1,025,899 are estimated to have reached bearing age.

The California orange crops exert comparatively small influence upon the easternmost markets, but they have a decided tendency to keep the foreign orange trade east of Chicago.

The Florida orange crop for nine years has been as follows:

Florida orange statistics.

1884–5		600,000	boxes.
1885–6		900,000	"
1886–7		1,260,000	"
1887–8		1,450,000	"
1888–9		1,950,000	"
1889–90		2,150,000	"
1890–1		2,450,000	"
1891–2		3,500,000	"
1892–3	probably	3,000,000	"

The total imports of oranges and lemons into the United States for a series of fiscal years (ending June 30) have been as follows:

Orange and lemon imports.

Years.	*Oranges.*	*Lemons.*
1885	$2,088,204	$2,510,426
1886	1,871,839	2,608,819
1887	2,408,140	3,835,147
1888	2,268,872	3,395,983
1889	1,961,889	3,189,534
1890	1,916,652	3,374,032
1891	2,339,987	4,351,970
1892 (calendar year)	1,227,311	4,831,334

Notwithstanding the rapidly increasing production of oranges in the United States, the imports seem to be holding their own, for the most part, a fact which shows that the consumption of oranges must be greatly on the increase. The lemon movement from foreign countries is rapidly growing, and the domestic lemon crop is not yet large enough to influence it.

Arizona.

Arizona promises to become an important region for citrous fruits. The first important shipment of oranges from Arizona was made about the opening of the year 1892. The following dates, given by a correspondent in *Fruit Trade Journal*, afford a general view of the progression of the season in Arizona, the fruit prospects of which are certanly inviting: "In 1886 there were ripe apricots in Yuma, May 15; in '87, on May 14 apricots were ripe, figs on the 16th, and grapes June 6; in '88 mulberries were ripe April 21, wild currants or quaviries May 5, figs and apricots May 12, watermelons May 25, White Adriatic figs and Black Hamburg grapes June 2nd, and Muscatel grapes, muskmelons and second crop of figs on June 7; in '86 wheat was ripe May 4th, white and blue figs 10th, Muscat and Black Hamburg grapes on May 25th, and second crop of figs June 29th. Yuma figs that year sold in San Francisco

May 21st for $1 per pound. They were shipped by Dr. J. H. Taggarts. In '90 blackberries were ripe May 10th, wheat on the 17th, green corn was brought in by the Indians on the 17th, tomatoes were ripe the 17th, figs and apricots the 31st, wild currants June 7th, white figs the 14th, and Tokay grapes on the 27th; in '91 figs were ripe May 15th; grapes June 2d, watermelons on the 6th. This season apricots were ripe May 1st, figs on the 7th, plums on the 8th, blackberries on the 9th. Figs were ripe this year 9 days earlier than last, 24 days earlier than in '90, 3 days earlier than in '89, 5 days earlier than in '88, and 9 days earlier than in '87."

Arizona.

Arizona promises much in many horticultural industries. The following clipping from the *Fruit Trade Journal* of June 18, 1892, records the opening of an important venture in that untried country:

"On Monday [June 14] the first car of apricots from Arizona reached this city [New York], and was sold at auction on the Erie pier. The fruit landed from this car utterly ruined, and only averaged about 10 cents per half crate. Some of it sold as low as 3 cents per half crate, and its condition may be judged from the fact that the Board of Health seized 250 crates and had them carted to the dump. This car was rejected by the consignees, Messrs. Sgobel & Day, and was sold 'for account of whom it may concern.' Yesterday morning the second car, containing 1,086 half crates Royal apricots, arrived and was sold at auction by the above firm from 90 cents to $1.40 per half crate. The fruit was of very handsome quality, larger than that coming from California, and well packed, but it was dead ripe, otherwise it would have brought much higher figures. This latter came in a different kind of a refrigerator car, which had been properly iced on the way, and therefore brought its contents in good condition. The fruit is fine, and if packed a little greener, and the cars are properly iced on the way, there is no doubt that it can be brought through here in good condition."

Arizona apricots.

Olives.

The *olive*, which is now attracting much attention in California, and which is undoubtedly destined to become a very important product in the extreme southwest, is discussed as follows in an editorial in the *California Fruit Grower*:*

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*Cal. Frt. Gr. xi. 253 (Sept. 24, 1892).

"The olive is being extensively planted and widely distributed in California. It is one of the very first trees brought to the country from Spain and Mexico by the good padres, more than 100 years ago. It is only within the past few years that the olive has met with full appreciation at the hands of California horticulturists. But few orchards of considerable age are to be found in the state, aside from the few old, gnarly trees that proclaim here and there the site of an ancient mission. Mr. Ellwood Cooper, of Santa Barbara county, and the Kimball Brothers, of San Diego county, have been for many years the most extensive growers of olives and the largest producers of oil in this state. The pure oil products of their olive orchards have established the value of California oil in many of the great markets of this country, though as yet the output of olive oil in this state is comparatively small, but with the immense number of olive trees now growing in orchards, a very large production is only a queston of a few years. Olives have been most extensively planted in the southern counties, though the industry is reaching out in various directions. The people are fully awake to the advantages derived from planting the olive, which fact accounts for the planting of some hundreds of thousands of trees during the present year.

Olives in California.

"Mr. Cooper reports the yield of oil to be from 10 to 12 per cent. in weight of the fruit used; hence, some idea may be gained of the possible outcome of olive planting as a business venture. In some sections of the state, the olive bears early and abundantly, and it is generally understood that the tree requires less care than most others. To give some notion of the production of oil in the great producing centers of the world, we may state that Italy, with an area of only 112,000 square miles, has 2,250,000 acres devoted to olive culture, from which the average annual yield is about 54,000,000 gallons. Of this amount, about 20,000,000 gallons are annually exported, of which the United States gets a small part. An immense area is devoted to the olive in Spain, and is estimated at about 5,000,000 acres, from which there is a yearly output of 150,000,000 gallons of oil. Only a small part of this oil is exported, some 10,000,000 gallons, owing to its inferior quality.

Olive statistics.

"To gauge the capacity of the Spaniard as an oil consumer, we may mention that the population of Spain and Portugal is less than 22,000,000, while the home consumption of a very poor grade of olive oil is about 140,000,000 gallons yearly. The people of the United States, however, are very small consumers of olive oil, the imports for the the year ending June 30th, 1890, being 893,984 gallons of salad oil, while for 1891 they reached only 605,509 gallons, and for the year ending with June last, 706,486 gallons, at a cost of $876,613."

Nut growing.

Nut culture is assuming commercial importance in special regions. Perhaps the most promising development is that of the pecan industry in the south, inasmuch as this nut is adapted to an extensive range of territory, and is not in direct competition with other nuts. The European walnut and the almond are the most important nut crops of California, although chestnuts, pecans, filberts, and others, are considerably grown. The walnut is confined mostly to Los Angeles, Ventura and Santa Barbara counties. The estimated crop of 1892 is 2,300,000 pounds, against 2,500,000 pounds in 1891, 2,000,000 pounds in 1890, 1,500,000 pounds in 1889, and about 1,000,000 pounds in 1888. The shortage of the present year is laid to unfavorable weather.

Almond crop.

The almond crop is thought to be considerably larger this year than in preceding years. The crop of 1891 was 25 carloads, or 572,000 pounds; 1890, 10 carloads, or 198,067 pounds; 1889, 22½ carloads. The imports of almonds in the meantime have been as follows for the fiscal years ending June 30:

Year.	*Pounds.*	*Value.*
1889	5,545,400	$595,227
1890	5,715,858	813,278
1891	6,812,061	931,007
1892	7,629,392	1,028,671

Fig culture.

Fig culture has been considerably agitated in California at intervals, and it attained new prominence last year upon the introduction of the fig-wasp from Smyrna.* Receivers in the east declare that California can never compete with the eastern Mediterranean countries in the production of figs, either in price or quality. In this connection, the following editorial in the *California Fruit Grower*,† which takes much the same position, will be interesting:

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* Annals for 1891, 36.

† Cal. Frt. Gr. x. 345 (May 28, 1892).

Figs in California.

"That the fig does not enter into daily use more largely among the people is no doubt to be regretted, for it is a rich, wholesome and nutritious article of diet. Until lately the varieties in cultivation in this state were not such as to justify their planting on a large scale; but now that it is better known what varieties succeed best in various localities, a wider extension of fig culture may be looked for with confidence. * * * But let us here inquire just how important an industry fig cultivation in California may become. To begin with, it cannot be reasonably hoped that we may successfully compete in foreign markets with those who produce and prepare figs for those markets and our own at the present time. If, through the evolution of a steel-pointed blastophaga* or otherwise, we shall be able to produce a fig good enough to capture and hold the home market, we shall have accomplished much more than most men hope for in this generation. The present consumption of this fruit in the United States must therefore be taken as the limit beyond which fig culture could not probably be made profitable, though an increased consumption might reasonably follow larger production and lower prices. Among the single-fruit enthusiasts of California, the fig man holds a conspicuous place. He would have us believe that the fig should be cultivated wherever the soil and climate will permit, which would be over some millions of acres in California, to say nothing of Arizona, Louisiana, Alabama, Mississippi and Florida, in parts of which the fig will thrive. But let us submit the fig proposition to the test of mathematics; and in this we need take no account of present home production, as it cannot materially affect the conclusions to which the figures force us.

"Importations of figs into the United States for each year ending June 30th, as follows:

Fig statistics.

Year.	*Pounds.*	*Value.*
1886	7,233,070	$505,876
1887	8,724,583	487,602
1888	10,058,053	496,755
1889	10,649,049	$482,759
1890	10,284,908	456,567
1891	9,201,565	697,562

"Total imports for six years, 56,151,288 pounds, valued $3,127,121; or an average of 9,357,538 pounds per year, worth $521,187, or $5.57 per 100 pounds.

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* It is reported that Dr. Gustav Eisen has found a new blastophaga or fig-wasp in Lower California, which he hopes to introduce into California for trial in experiments with caprification.

"With these facts before us, what present extension of the fig industry will be justified? Most varieties of figs should be planted about 30 feet apart, giving, say, 50 trees to the acre. Allowing that a mature tree will yield 50 pounds of cured figs annually, it would require only 200,000 trees, covering 4,000 acres of land, to supply the present annual imports of that fruit. To what extent the consumption of crystallized figs and jams would ultimately warrant planting cannot as yet be known; but it need not at present be considered, in view of the fact that we must displace entirely the foreign article before requiring the acreage above named, and from present indications that time must be far in the future."

Figs in America.

The *Kaki* or Japanese persimmon was this year shipped to Europe from California for the first time. Five carloads were sent east, a portion of which reached London, Liverpool and Glasgow. Financially, the experiment does not appear to have been profitable, but it is interesting to know that so soft a fruit can be carried 6,000 miles successfully. The kaki is so unlike any popular American fruit that it will no doubt be obliged to work its way slowly into popular favor.

Kaki.

Grapes were fair to good as a rule, and prices ruled low. *Raisins* were medium to fair in California. The estimates of the grape crop for September and November by the statistician of the Department of Agriculture are these:

Grapes and Raisins.

	Sept. 1.	*Nov. 1.*		*Sept. 1.*	*Nov. 1.*
Maine	95	96	**Tennessee**	66	65
New Hampshire	93	94	**West Virginia**	88	85
Vermont	87	93	**Kentucky**	80	79
Massachusetts	88	90	**Ohio**	70	71
Rhode Island	85	88	**Michigan**	82	88
Connecticut	84	86	**Indiana**	84	80
New York	82	82	**Illinois**	69	68
New Jersey	87	85	**Wisconsin**	79	80
Pennsylvania	87	88	**Minnesota**	77	80
Delaware	95	95	**Iowa**	81	82
Maryland	78	80	**Missouri**	78	71
Virginia	80	83	**Kansas**	82	79
North Carolina	86	83	**Nebraska**	80	82
South Carolina	87	80	**Colorado**	75	75
Georgia	93	91	**New Mexico**	88	90
Florida	92	90	**Utah**	82	82
Alabama	93	92	**Nevada**	70	
Mississippi	80	75	**Idaho**	93	
Louisiana	90	90	**Washington**	98	95
Texas	81	81	**Oregon**	87	95
Arkansas	70	67	**California**	85	60

The advent of the copper sprays for mildew and black-rot has given new confidence to grape-growers, and the application of them can be no longer considered as an experiment. A probable secondary result of the success of the sprays will be the re-introduction of various hardy European grapes, which it has been impossible to grow out of doors in the east, largely because of mildew. There is already some indication that the Bordeaux mixture will completely protect these vines.*

Grape movements.

Two most novel counter movements in grapes have taken place during the year—the shipment of American grapes to England, and English grapes to America. Nine carloads of Concord in 9-pound baskets were shipped by the Germania to England by growers in Chautauqua county, New York. The fruit arrived in Liverpool November 5 in good condition. In London, 1,000 baskets sold for 45 to 57 cents each. The growers netted from 20 to 23 cents per basket on the cargo, which is quite as good as the ordinary home market. The grapes were not of sufficiently high quality to please the English purchasers, however, and the better varieties should be substituted for the Concord, at least in part, in succeeding exportations.

The movement from England to America consisted of small consignments of house-grown grapes to New York, where, in the winter of 1892-3, they sold for $1.50 and even $2.25 per pound. This experiment is chiefly interesting to Americans in showing that there is a good limited market for hothouse grapes.

The California raisin crop is now an important commercial factor. The following historical summary of the industry is from the *California Fruit Grower* :†

California raisins.

"The first recognized shipment of California raisins was made in 1873, and consisted of less than 6,000 boxes. This was followed by a product of only 9,000 boxes the next year, and 11,000 the year after. From this time forward the increase has been rapid, and the crop of 1887 reached 800,000 boxes. Last year the product was 2,600,000 boxes, or 52,000,000 pounds, and the entire product of raisins in the state, from 1873 to 1891 inclusive, reached 9,488,000 boxes of 20 pounds each ; or a total of 189,760,000 pounds. From

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* See Alex. W. Pearson, in Garden & Forest, v. 618 (Dec. 28, 1892).

† Cal. Frt. Gro. xi. 264 (Sept. 24, 1892).

Raisin statistics.

1885 to 1891, inclusive, the home yield was 174,060,000 pounds, or an annual average of 24,865,714 pounds. During the same period the aggregate imports of foreign raisins were 272,135,908 pounds, and for the fiscal year ending June 30 last 20,687,640 pounds, making the annual average importation for the past 8 years 36,602,983 pounds, at an average annual cost of $2,152,000. The export of home-grown raisins or those imported does not as yet cut a conspicuous figure in the market, hence we may properly take the consumptive capacity of the people of the United States to be nearly the combined amounts produced at home and brought in from abroad. On this basis we find the average yearly consumption of raisins in this country for the past 8 years to be about 65,000,000 pounds. A careful study of the statistics, however, shows an increasing capacity of the raisin market. Thus in 1884, the consumption, measured by the home product added to the imports, was in round numbers 57,000,000 pounds; 1885, 47,000,000; 1886, 54,000,000; 1887, 56,000,000; 1888, 59,000,000; 1889, 60,000,000; 1890, 75,000,000; and 1891, 92,000,000 pounds. It is quite probable, however, that the figures for the last two years are above what may be fairly regarded as our annual consumption. But with these figures before us we may perhaps safely say that we use 75,000,000 pounds of raisins yearly, and that our production thus far has reached only about two-thirds of that amount. When we reflect, however, that there are in the San Joaquin valley alone, in the counties of Fresno, Tulare, Kern and Merced, fully 50,000 acres of raisin vines, and in the other raisin producing counties of San Bernardino, San Diego, Los Angeles, Sutter, Yolo, Shasta, Solano, Yuba, Santa Clara, Sonoma, Ventura, Colusa and Tehama, a very large acreage also, we can easily see that a full yield of raisins would stagger all the available markets.

‘‘While our raisins are protected by a duty of 2½ cents per pound on foreign stock, yet the Spanish raisin still competes sharply in nearly every American market.

California raisin crops

CALIFORNIA RAISIN CROP FOR FIVE YEARS.

1887	raisins,	20-pound	boxes	800,000
1888	“	“	“	950,000
1889	“	“	“	1,250,000
1890	“	“	“	1,900,000
1891	“	“	“	2,600,000
Total number boxes, five years				7,500,000”

The Spanish raisin crop was less than a full crop, and the quality is said to be rather below the average. Much damage continues to be done by phylloxera, and in the Malaga and other districts the industry shows a steady decrease. The output of Malaga province to the United States for fourteen consecutive years is given as follows:

Spanish raisins.

	No. boxes.		*No. boxes.*
1878	1,146,810	1885	671,088
1879	1,141,560	1886	491,936
1880	1,119,959	1887	333,758
1881	988,784	1888	110,732
1882	1,037,372	1889	94,766
1883	868,584	1890	84,602
1884	721,491	1891	70,456

Some of this lessening trade with the United States is no doubt due to the supply from California and to duty regulations, but in general it is said to be a measure of the decline of the raisin industry, due to phylloxera* and mildew. Upon this point, Consul Newson's report upon the vineyards of Malaga is timely:

Malaga vineyards.

"The grapevine lands of Malaga, once the source of so much prosperity, and furnishing such constant and remunerative employment to so many, have for several years past greatly deteriorated in value, growing out of the loss of vines, hundreds of acres having been devastated by that terrible disease which so tenaciously attacked the roots of the old vines and nearly exterminated them. Vines which had borne almost uninterruptedly for hundreds of years gave way under the attack of thousands of little insects which infected the roots, and many cultivators of the grape have been ruined by the disaster. The vineyard districts of the province are now reduced to two prominent varieties of grapes—the Pedro Ximen and Muscatel—although many other varieties are raised in small quantities. Other classes have totally disappeared, chiefly owing to the ravages of the mildew and phylloxera. Of the 283,175 acres of vines cultivated in 1884, 57,104 acres were totally lost from the ravages of the insects, over 96,000 acres were partially affected, and 17,000 acres were contaminated, leaving 71,807 acres not then affected, but which have since become almost worthless, as the vines have been killed. During the years 1888-90 the loss of the vines was very great, so that the exportation of raisins from this consular district alone fell from 641,835 boxes in 1886 to 70,456 boxes for the fiscal year ended June 30, 1891, being a decrease of 571,379 boxes in four years. There was a decrease also in the fiscal year 1890-91 of 35,300 boxes, so that one can readily see, from the official figures here given, that the Spanish grape vines, which for hundreds of years had borne abundantly, were in a fair way to be totally annihilated unless something was quickly done to arrest the evil.

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* For a general account of the distribution of phylloxera in Europe, see Annals for 1891, 110-114. Also, Annals for 1890, 98-103.

Malaga vineyards.

"During 1887 some 8,000 acres were planted with American cuttings, and in this act there seemed to be a solution to the question whether the American vines shall supersede the Spanish. A low estimate by good authority places the number of American cuttings which have been introduced into this province and into other parts of Spain during the past three or four years at 50,000,000. In and about Malaga, with some few exceptions, the vines of the American cuttings with the Spanish graft look exceedingly well; and one is proud as he rides along the Alicante road and other roads just outside of the city and sees thousands of vines, green and luxuriant, in immense fields, all in a healthy condition, and knows that the best part of these vines came from the United States.

"At Denia, Spain, about 320 miles from Malaga, on the Mediterranean, the grape is extensively cultivated, and is rapidly coming into competition with this market. While the article is not so good as the Muscatel, yet the rapid process of curing permits their export at much cheaper figures and much earlier than from here. There the grape is dipped into hot lye, and it is a raisin in a few days. Here it takes two weeks to cure the Muscatel, but when cured it is the best raisin in the world, the California raisin, perhaps, excepted. The best raisins are sent to England, the next best to the United States. The Denia raisins are used almost exclusively for pies, puddings, etc., because they are cheaper."

The Valencia raisin crop for 1892 appears to have been considerably under the averages of good years. The last three Valencia crops were as follows:

Valencia raisins.

Sent to	*1890. Cwts.*	*1891. Cwts.*	*1892. Cwts.*
United States	318,855	149,785	161,073
Canada	52,952	30,763	30,426
Great Britain	325,695	255,374	294,517
Home Exports	15,000	17,000	35,459
Miscellaneous	123,308	100,684	61,460
On hand December 31	14,190	171,394	9,000
	850,000	725,000	591,935

Those interested in the Spanish raisin trade contend that inasmuch as the Spanish and California products are cured in different ways, they can be put to wholly different uses, and need not, therefore, severely compete with each other. This proposition is not accepted by California growers, however.

Zante currants.

A serious source of competition with the California grape interests is the Zante, or so-called black or dried currants of the shops. These currants are dried grapes and they are imported into this country in immense quantities. They are now on the free list, the duty having been removed with the impression that there is no competing crop in this country. The Californians desire to make the experiment of growing the Zante grape if there were sufficient duty to warrant it; but there is an important competing product in the dried wine grapes of the Pacific slope. These answer the purposes to which the Zante grapes are put. The importations of Zante currants, or grapes, into the United States for a series of years are very large:

	Quntity, lbs.	*Value.*		*Quantity, lbs.*	*Value.*
1879	17,405,347	$520,832	1885	25,534,507	$723,415
1880	18,007,492	600,603	1886	22,623,171	744,784
1881	21,631,512	845,773	1887	29,196,393	1,062,326
1882	32,592,231	1,388,886	1888	30,636,424	1,176,532
1883	31,171,171	1,247 504	1891	33,128,140	1,246,074
1884	32,743,712	1.220,575			

Foreign fruits.

Foreign fruits still come to America in enormous quantities, notwithstanding the immense domestic production. The total imports of the leading foreign fruits for the year ending June 30, 1892, are as follows:

	Oranges.	*Lemons.*	*Prunes and plums. Pounds.*	*Raisins, Pounds.*	*Figs. Pounds.*	*Almonds. Pounds.*
Baltimore	$10,843	$36,623	178,055	38,898	66,099	13,345
Boston	206,481	457,285	181,463	246,466	881,013	222,786
New York	794,195	3,013,389	8,759,890	19,327,971	6,215,449	7,104,717
Philadelphia	52,528	188,014	468,796	170,890	208,297	25,344
New Orleans	45,152	739,293	13,171	1,689	57,170	33,306
San Francisco	12,404	200	4,376	2,352	. . . .	25,288
Chicago	157	35,616	1,068,966	883,982	903,450	198,930
St. Louis	. . .	. . .	61,682	14,568	4,928	389
Other points	88,578	77,843	133,398	824	2,353	5,197
Total	$1,210,338	$4,548,263	10,869,797	20,687,640	8,338,759	7,629,392

California fruit-growing, as a whole, gave excellent returns in 1892, notwithstanding the indifferent crops and the competition on all sides. The following review of the season is contributed by E. L. Goodsell, a well-known New York fruit merchant, to the *California Fruit Grower:*

Fruit growing in California.

"Generally speaking, the past season was a most encouraging one for the fruit producers of California in a financial way. Prices, while not as high as in 1890, ruled at remunerative figures as regards cost of production, a most important necessity for the grower after the disastrous season of 1891.

"Three factors tended to greatly develop the fruit industry of the state last season, and explain why prices were good. One was a partial failure of eastern crops generally, creating a large demand in every state in the Union. Another was the fact that in almost every small town and hamlet California fruits are now a staple article of trade, indicating that our efforts to introduce your products everywhere have met with success. The last but most important of all was the splendid service given us by the railroad companies in fulfillment of their promise to inaugurate fast freight trains to carry California fruits to eastern markets.

"It will be remembered that last spring, after due consideration of the facts I presented as to the absolute necessity of such action on the part of the railroads if the fruit industry was to be fostered, encouraged and developed, a special fast service was agreed upon by all the lines, the S. P. R. R. taking the initiative. When I came to your coast last winter I found the fruit people discouraged, as well they might have been, after getting practically nothing for their fruit in 1891. While heavy eastern fruit crops that season had something to do with this state of affairs, low prices followed more from fruit arriving in unsound condition, owing to bad service on the transportation company's part. How slow this was can be realized by my statement that in 1891 the average number of days my cars were en route was thirteen. What the railroad companies have done towards bettering this very disastrously slow time can be appreciated by stating that my cars reached New York on an average of nine days during the past year. This difference in time has been worth at least $500,000 to California growers, by reason of the fruit being in good, salable condition on arrival, enabling me to realize full value in every instance, where if fermentation had set in, as was generally the case the previous year, it was impossible to get good prices. Hence, as it is the intention of some of the connecting lines to better their schedules this coming season, I look for an average of at least seven days on this year's shipments.

"A few figures regarding the past season's work may be interesting to fruit-growers and the public generally. These figures can be said to represent about the prices that other markets have averaged, although probably New York's results for Bartlett pears and Tokay grapes are higher. Compiling these after four years' experience with good and bad markets, the results should be of great value to producers, as showing which varieties are best and most profitable to cultivate. Where the figures are very low on certain kinds of fruit, it is possible that the average may have been greatly reduced, owing to some large lots having reached me in bad condition:

The year in California fruits.

	1889.	*1890.*	*1891.*	*1892.*
Average gross per carload of 24,000 pounds of fruit . .	$1,241.69	$1,415.16	$1,114.54	$1,323.80
Average net per carload of 24 000 pounds of fruit . .	616.67	805.48	489.50	756.89
Gross average per 10-pound box of cherries	1.45	1.61	1.38	1.12
Gross average per 40-pound box of Bartlett pears . .	2.90	2.54	1 82	2.18
Gross average per 20-pound box of apricots	1.47	1.48	1.29	1.30
Gross average per 20-pound box of peaches	1.44	1.64	.89	1.10
Gross average per 20-pound box of prunes	1.61	1.76	1.23	1.37
Gross average per 20-pound box of plums	1.44	1.68	1.15	1.33
Gross average per 40-pound box of Tokay grapes .	3.90	3.90	2.80	3.56
Gross average per 20-pound box of Tokay grapes .	2.23	1.69	1.30	1.56
Gross average per 20-pound box of Muscat grapes . .	1.41	1.28	.85	.95
Gross average per 20-pound box of Cornichons . . .	2.01	2.03	1.78	1.69
Average gross per 20-pound box of Emperors	1.90	1.94	1.31	2.76
No. of cars sold by me in N. Y. during the years named . .	151	553	341	390
Total No. sold by all in N. Y.	300	741	665	675

"There is every reason to believe in the future of California fruits as regards profitable cultivation. While it is true that the volume of production is rapidly and greatly increasing, it is also true that those engaged in the business of marketing the crops are planning to provide new outlets in our own and foreign countries, anticipating that every city, town and hamlet of the United States will need to consume California fruits in order to take the crop.

Handling California fruits.

"That eastern merchants engaged in the California fruit industry are fully alive to the necessities of the business, is evident from the action just completed on the part of twenty-seven leading firms in twenty-seven of the large business centers of the United States and Canada, in the formation of the National Fruit Association. Up to the present, the business of shipping the fruit for the producer has been in the hands of a few, who have, it is claimed by the growers, not studied their interests, but rather allowed jealousy of competition, and selfish personal motives to dictate what route the cars should go by, what market the fruit should go to, often without regard to the grower's wishes, and have favored markets where there was more profit in commissions rather than the one where the best results could be obtained, seeking to supply only a few markets on account of being interested in these, thus preventing a wide distribution and general introduction.

"Besides this, natural competition does away with all unnecessary costly factors or middlemen, thereby bringing the producer as closely in contact with the consumer as possible, which is the case with the National Fruit Association. It is the purpose of the association to establish a representative at every shipping point, with a main office in Sacramento, and offer every facility that has been heretofore given the fruit producer, with the additional advantages of twenty new markets to select from, absolute freedom of action as to the choice of the same, open bulletins as to the prices ruling daily at each of the points, direct remittances to the grower, where previously these went through the middlemen, and accord absolutely fair and impartial treatment by the manager of the association."

Small fruits.

The *small fruits*, being less dependent upon the weather of winter and spring than the orchard fruits, have for the most

Strawberries.

part given fair to good returns. The small fruit industry is gradually spreading westward and southward, but it is yet comparatively small in amount west of the Mississppi. There was a greatly increased planting of strawberries in 1892 in the region tributary to Chicago, in anticipation of the demand consequent upon the Columbian Exposition. The strawberry crop in the Oswego, New York, region, which is the latest important section tributary to New York markets, was good. The annual average crop of this region is about 1,500,000 quarts.

The *cranberry crop* is smaller than for the two preceding years.* The cultivated crops for the three years have been estimated as follows:

Cranberry statistics.

	1890.	*1891.*	*1892.*
New England . . .	374,000 bus.	480,000 bus.	375,000 bus.
New Jersey	150,000 "	244,000 "	160,000 "
Wisconsin	275,000 "	40,000 "	65,000 "
	800,000 bus.	764,000 bus.	600,000 bus.

The prices were renumerative, owing very largely to the shortage in the crop and the scarcity of other fruits.

Cranberries for Europe.

The cranberry industry appears to have reached the normal limit of demand. It has been evident for two or three years that considerable effort must henceforth be exerted in order to create or open new demands for the increasing acreage. Preserving cranberries, while perfectly successful so far as the operation is concerned, has thus far given little promise of commercial success, for the berry naturally keeps so long that purchasers prefer to have the fresh fruit. In remote markets, the compact canned or jellied goods may eventually find a profitable sale, but for the present these markets are practically unavailable. A very promising movement is on foot to introduce the fresh cranberry to European markets. At a meeting of cranberry growers held in Boston, January 23, 1892, the following were appointed a committee to formulate a plan of organization and co-operation for the opening of a foreign market for cranberries: George F. Baker, of Boston; A. J. Rider, of Trenton; C. W. Wilkinson, of Philadelphia; Emulous Small, of Harwich Port, Mass.; A. D. Makepeace, of West Barnstable, Mass.; G. R. Briggs, of Plymouth, Mass. In accordance with the plan reported by this committee and approved by a meeting of growers held at Hyannis on the 26 day of April, and by the Special Foreign Trade Committee of the American Cranberry Growers' Association, held in Philadelphia on the 21 day of May, 1892, the following agreement was made between the Cranberry men and the Fruit Growers' Trade Company, a body organized for the purpose of undertaking trade in fruits:

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*See Annals for 1890, 17. Annals for 1891, 18.

Cranberry organization.

"*It is agreed*, between the undersigned Cranberry Growers, of the first part, and the Fruit Growers' Trade Company, a corporation under the laws of New Jersey, of the second part, that we, the said parties of the first part, will become stockholders in the said company by contributing to its capital stock such percentage of our several crops of cranberries each year as shall be called for by the directors of the said company, not to exceed three (3) per centum in any one year, for a period of three years, beginning with the first crop after taking effect of this agreement.

"*It is further agreed*, on behalf of the parties of the first part, that the said fruit so contributed shall be of the best quality grown by them, cleaned and packed in boxes or barrels, with the stencil or trade-mark of the grower thereon; marked for shipment as directed by the Fruit Growers' Trade Company, and delivered to the most convenient railroad or transportation company; and it is agreed between the parties to this contract, that on arrival at destination, each grower shall receive credit for fruit so shipped at the price that day quoted in the *Producers' Price Current* of New York for that grade of fruit, less transportation charges, not to exceed 10 cents per box or 30 cents per barrel. (All freight in excess of that amount to be paid by the company.) The grade is to be determined by the agent of the Fruit Growers' Trade Company charged with that duty; and for each twenty-five dollars ($25) so credited, the said Fruit Growers' Trade Company shall cause to be issued a certificate for one share of the capital stock of the said company.

"*And be it further agreed*, that if the grower so elect he may, in lieu of fruit, remit in cash the value of said fruit as quoted in the *Producers' Price Current* of New York on the day previous to the remittance, less the price of freight to New York; *and it is further agreed*, that for any fractional part

Cranberry organization.

of a certificate the grower shall stand credited until such subscriptions aggregate twenty-five dollars ($25), when a certificate shall be issued as above.

"*It is further agreed*, on the part of the said company, that it will use the fruit and funds so contributed to open new markets, extend the demand and increase the consumption of this fruit; that it will, through its board of directors, make an annual statement to stockholders of the operations of the company during the year, and divide profits in dividends as prescribed by the charter and by-laws of the said company, which are made a part of this agreement.

"*It is further agreed*, that the present stockholders of the Fruit Growers' Trade Company who shall become parties to this agreement shall stand credited with amounts already paid in as capital in the said company as against assessments under this agreement, and on the return of the present part-paid certificates the treasurer shall issue new paid-up certificates for the amount paid on the said stock.

"*This agreement* shall be valid and binding upon the said company when properly signed by the grower, but shall not take effect until signed by growers representing a majority of the cranberry interest of the country as shown by the most available records and statistics of the crop."

Abundant pledges of support have been received, and the above scheme now appears to be assured of a thorough trial. The purposes of this agreement are understood to be the following:

To popularize the cranberry.

"1. The establishment of daily sales at auction at Liverpool and other distributing centers, where cranberries are now only occasionally catalogued and sold.

"2. To interest dealers, wholesale and retail, in the fruit by convincing them of its merits and popularity, and by liberal commissions.

"3. To educate the people to use and appreciate them by cooking and gratuitous distribution in public market places, after the plan successfully pursued by Hecker and others.

"4. To interest the large canners and preservers in the fruit, and, if possible, have them put up in the same style of package and placed alongside other popular jams and preserves; failing in this, to have them put up by contract and so placed, and with such a margin of profit as will be interesting to dealers.

"To secure the co-operation of the United States Department of Agriculture, and, if possible, government aid to the enterprise."

Pineapples in Florida.

Pineapples. The crop of pineapples for 1892 was a gratifying one to those who have predicted that the fruit can be grown profitably in Florida. "The pineapple industry is rapidly developing in Florida," says the *Fruit Trade Journal.** "A few years ago it was comparatively unknown. This year the crop of the Indian river section, which is the heart of the pineapple section, is double that of last year, and some estimates put it treble of last year. The most conservaative estimates, according to a gentleman in Savannah, from Titusville recently, put the crop at 25,000 to 30,000 crates, while some estimates go as high as 35,000. The shipping season began about two weeks ago, and will last about two weeks longer. This season is a short one, lasting only a month. The principal producing section is about 100 miles below Titusville, at Eden, on the Indian river. The crop this year is a very fine one. The chief markets to which the fruit is shipped are the northern markets, although Chicago, Cincinnati and the western cities are becoming large consumers.

"The pineapple industry is even yet comparatively little known. Captain Richards, of Eden, is the pioneer of the industry in the Indian river section, and he is by far the largest grower. His plantation is an extensive one, and he has realized large profit from the fruit. Titusville is the point through which the fruit is shipped, and the Indian river steamers do a large business at this season handling the crop. A few other sections of Florida grow the fruit, but none so extensively as the Indian river section. A few pineapples are grown in the vicinity of Orlando, but they are grown under sheds, while on the Indian river both the soil and climate are favorable to the crop, and it grows luxuriantly in the open air. The industry promises to become one of the most important in Florida, and a year or two from now the crop will have been quadrupled. The fruit is easily grown. A slip planted one year becomes a bearing plant the second year. The fruit from the Orlando section is shipped to England. It is a particularly fine variety, and finds a ready market abroad. A considerable crop is also grown in the extreme sonthern part of the state on the keys and is shipped to Key West, and from there via steamer to New York."

**Fruit Trade Journal*, vii. No. 7, p. 7 (June 25, 1892).

Dried fruits.

Dried fruits. The enormous and ever increasing acreage of fruits in North America demands that much of the product shall be marketed in unperishable form. Most of the great markets are far from the scene of production. It is not strange, therefore, that America has developed far the most important evaporating, canning and other preserving interests on the globe. The dried and canned fruits are finding a good market in many parts of Europe, especially in France. The consumption of the so-called waste products of apples and other fruits—largely cores, skins and the cheaper grades of evaporated fruits—are exported to France to the value of nearly half a million dollars annually. The dried fruit product of New York state alone exceeds a million dollars' worth annually. There is a strong protective feeling in some of the European nations which checks the consumption of American goods. This is especially strong in southern Germany. This feeling is strongly expressed under the guise of a fear of contamination of zinc, as it has been discovered that zinc trays are largely used in the manufacture of evaporated fruits. The output of dried and canned fruits will, no doubt, be comparatively light for 1892, owing to the light or indifferent crops.

California is destined to lead the world in the production of dried fruits. The output of that state for five years is seen from the following table to have been enormous:

Dried fruit statistics.

	1887. Lbs.	*1888. Lbs.*	*1889. Lbs.*	*1890. Lbs.*	*1891. Lbs.*
Apples	750,000	550,000	500,000	1,000,000	800,000
Apricots . . .	3,500,000	3,200,000	2,500,000	8,500,000	13,500,000
Peaches . . .	4,500,000	8,600,000	5,250,000	12,250,000	13,200,000
Pears	40,000	150,000	140,000	600,000	1,000,000
Plums	450,000	360,000	325,000	1,000,000	1,250,000
Prunes	5,825,000	8,500,000	17,000,000	14,000,000	27,500,000
Grapes	1,800,000	2,340,000	2,500,000	10,500,000	5,500,000
Nectarines . .	150,000	340,000	275,000	500,000	600,000
Figs	90,000	175,000	200,000	350,000	360,000
	17,105,000	24 215,000	28,690,000	48,700,000	63,710,000

The status of the California dried fruit industry is well considered in the following editorial comment in the *California Fruit Grower* :*

"Fruit drying is now recognized as one of California's leading industries. Sun-cured and evaporated peaches, apri-

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******California Fruit Grower*, **xi. 242 (Sept, 24, 1892).**

cots, nectarines, plums, pears, figs and apples are known and prized as articles of food in nearly all the markets of the world. The dry fruit industry in California is not only a source of profit to those engaged in this branch of the fruit business, but the entire fruit industry of the state is largely benefited by this method of marketing so large a quantity of fruit. Through the medium of fruit drying, the green fruit markets are relieved of enormous quantities of fruit each season. Take, for instance, the year of 1891, when the output of dry apricots in the Santa Clara valley was some 300 carloads, or say 6,000,000 pounds of cured fruit. Admitting that five and one half pounds of ripe Moorpark apricots make one pound when dried, we find that there were used in that valley alone 33,000,000 pounds of fresh apricots for drying during the season of 1891. Those familiar with the fruit harvest of that year will remember that the crop of apricots was enormous. After supplying the heavy demands of our canners and fresh fruit shippers, a large quantity of this decidedly popular fruit was left upon the trees unpicked, because the price paid by the buyers would not warrant the growers' harvesting it. If such a condition as that existed after the markets has been relieved of the enormous quantity of fruit that dryers used, what would have been the result had that 33,000,000 pounds of apricots been placed upon the market in the green state? Hence it is that fruit-drying in California will always be found profitable from a fruit-grower's standpoint, even if the cured product does not sell for any more than enough to pay for the curing; but if growers and dryers will exercise the proper care and caution, and produce a good article of California dried fruit, it will command a paying price one year with another.

Fruit drying in California.

"Nearly every one who is conversant with the fruit trade in this state remembers the eventful season of 1890. The failure of the eastern crop caused prices of both green and dried fruit in California to advance to almost unheard-of prices. Bleached, unpeeled peaches jumped in one week from 13 to 22 cents per pound. In the Vina district, Tehama county, Chinese bleached peaches, that have always sold at about 3½ cents per pound, reached the respectable price of 19 cents per pound in carload lots. Eastern buyers fairly tumbled over one another in their frantic efforts to secure a few carloads of California fruit at the high prices, paying spot cash for their purchases. The outcome of that season's business is still fresh in the memory of the eastern dealers, who loaded up with high priced stock, and were compelled to carry it over into the season of 1891, incurring a heavy loss, owing to a sharp decline in prices. A carload of 20,000 pounds of bleached peaches at 20 cents per pound would cost the purchaser just $4,000 f. o. b. cars. Now add $300 for freight to the east and other charges, and we find that the eastern buyers parted with large sums of money that season.

California dried fruits

"The low prices and slow market of 1891 may be largely attributed to the high prices and heavy losses sustained during 1890. We are conversant with one transaction, where a carload of fancy bleached peaches—crop of 1890—was sold in New York for 32 cents per pound, spot cash. The market commenced to decline rapidly, and during the spring of 1891, that same car of peaches was resold down to 10 cents, and finally the remainder of the car was closed out at 9 cents per pound. The purchaser of that carload of California bleached peaches lost $4,600. We cite this case to illustrate how extreme high prices are damaging to the future of our dried fruit trade; for with prices at high pressure there is sure to be a reaction, and when it sets in, the trade is paralyzed, so to speak.

"The green fruit crop of 1891 was very abundant, and everything looked favorable for a good market and good prices. Growers, mindful of the high prices realized during 1890, dried large quantities of fruit, naturally expecting a heavy demand from the eastern states, but when the season opened dealers were carrying large stocks of high-priced goods, which they were unable to dispose of except at a loss. The high prices necessarily demanded by retailers had largely restricted consumption, and prices naturally suffered a serious decline. Under these conditions eastern dealers did not care to take further chances in the purchase of California dried fruits until they could see the market cleaned up and the high-priced fruit of 1890 pass into consumption. Owing to this waiting policy on the part of the eastern buyers and dealers, holders of dried fruits on the coast became anxious as to the outcome, and being in need of ready money were obliged to consign their fruits to commission houses throughout the eastern states. Very many large consignments were made under the impression that with the goods on the spot better opportunities for disposing of the same might present themselves; but in this, as in the opening of the season's market, they were doomed to disappointment, for eastern buyers soon discovered that an enormous quantity of California dried fruit was in transit, through the offerings by the numerous brokers. There being no particular demand for dried fruits at that time, they allowed these consignments to be placed in the warehouses, and later on purchased the same at much lower prices than the fruits were offered at upon arrival.

California dried fruits.

"The low prices which growers and shippers were obliged to accept had the effect of increasing the demand, and the large output of the season of 1891 was widely distributed and nearly consumed prior to the arrival of new crop of fruit in 1892. During 1891 our dried fruits were introduced into very many new markets, and several large and promising outlets were secured through the medium of the low prices. There can be no doubt as to the difference of an immediate profit to the grower between a year of short crop and high prices, and a year with a full crop and low prices, but the gain is only temporary.

"California dried fruit has earned a world-wide reputation for its superior quality, cleanliness and the attractive condition in which it is packed. Very few persons, except those closely connected with the dried fruit business, have any idea as to the enormous proportions to which fruit drying in California has been developed. In 1884 the total output was only about 5,300,000 pounds, and in 1891 the output was estimated at 63,710,000 pounds, valued at $3,925,000."

The *vegetable crops* have been good, as a rule. *Potatoes* are an exception, however. They were a very short crop. Much of the failure was due to blight. The November report of the statistician of the Department of Agriculture sums up the potato crop of the year as follows:

Potato crop.

"The year was distinctly unfavorable almost from the time of planting, and the return of yield reflects the unfavorable conditions which have prevailed. The average yield per acre by the present return is 62 bushels, against 93.9 last year and 57.5 in 1890. The average yield for ten years ending with 1889 was not far from 80 bushels, and during that period the yield was smaller than the present return in only two years, 1881 and 1887. The shortage in New England is the result of unfavorable conditions throughout the latter part of the growing season. The crop started well, but during August and September there were local conditions which reduced state averages and resulted in the present short yields. The complaint was usually of drought, with some districts in which they were alternations of drought and excessive rainfall, causing irregular growth, with an early tendency toward rot and blight. The later returns from this section showed that the serious damage of the year was caused by rot, and the present returns, made after digging, emphasize the injury from this cause. In some districts there is a variability of return, which makes it difficult to ascertain the average yield. In Maine and Massachusetts some areas are reported as hardly worth digging, while other fields give an abundant yield. On the whole, the crop of New England, with only local exceptions, is light, tubers comparatively small, and quality not equal to the average. In New York the yield is not only light, but the potatoes are small, and in districts which are visited by blight or where the rainfall was excessive, the quality is poor. Many counties, however, claim a small crop of good quality.

Potatoes in 1892.

"The same conditions mark the year in Pennsylvania, though the yield is shorter than in New York, and the districts in which quality is good are not so extensive. The crop in the south is of local importance, was gathered early, and gave a fairly satisfactory yield. The early planted crops which escaped the drought gave the best results. In the Ohio and Missouri valleys and in the states of the northwest, where the bulk of the potato crop of the country is now grown, the season has been especially unfavorable, and the present returns of yield are very low. The crop generally, and especially the late-planted portion, was injured by drought, and in some districts the damage from this cause was intensified by a marked tendency toward rot. In Ohio and Michigan the yield is not only small, but the tubers are inferior. There is some damage from scab, leaving the proportion of marketable quality very small. In Illinois the average yield is reported at only 52 bushels, or 40 bushels lower than the yield of last year.

"The yield in the Rocky Mountain region, while generally larger than in any other portion of the country, is yet considerably below the figures of last year, and less than an average for that section. Basing an estimate upon the present returns of yield and the preliminary investigation of acreage, the present crop is probably less than 150,000,000 bushels, though the investigation which precedes the final estimate may slightly modify the present indication."

The *Prairie Farmer** sums up the potato crop as follows:

Potato crop.

"In conclusion we must say that the potato crop of Illinois, Iowa, Kansas, Missouri and Nebraska, while not a total failure, is far short of an average yield, and the product is poor in quality. The exceessive rains of last spring are accountable. In more northern latitudes, where the planting was done later, the yield per acre is fairly up to the average for years. The acreage, however, is not sufficient to make up the deficiency in the great potato regions of the Missouri valley, and Chicago will be fortunate if it secures its quota of thirty cars per diem during the current year. Northern Michigan is more than fortunate this year in the production of both potatoes and apples. The present crops are the largest ever produced in that territory."

Sweet potatoes.

The *sweet potato* crop was large in New Jersey, and fair to good in most other prominent regions, although the uncongenial weather exerted considerable influence upon it. The November estimate of the Department of Agriculture is the following:

New Jersey	100	Tennessee	80
Pennsylvania	90	West Virginia	85
Delaware	85	Kentucky	76
Maryland	80	Ohio	90
Virginia	86	Indiana	87
N. Carolina	95	Illinois	92
S. Carolina	80	Iowa	82
Georgia	89	Missouri	90
Florida	85	Kansas	84
Alabama	89	Nebraska	70
Mississippi	78	Colorado	110
Louisiana	95	Washington	110
Texas	86	California	115
Arkansas	97		

**Prairie Farmer*, Nov. 5, 1892, p. 712.

Tomatoes.

Tomatoes are yearly increasing in popularity and in consequent extent of cultivation. The importance of the tomato as a canned product is largely responsible for this condition. Perhaps the most important recent development in tomato growing is its great increase in the lower Mississippi valley, notably in Mississippi, whence the early markets of Chicago and tributary regions are supplied. The crop of 1892 appears to have been good, although injured in some regions by a mysterious blight.*

The *Fruit Growers' Journal* speaks as follows of the year's crop in the Mississippi valley:

Tomatoes and strawberries in the Mississippi valley.

"The general result of fruit and vegetable growing for market purposes this year has been pretty satisfactory in this state and in all the states in the same latitude. With an exception in favor of some isolated places, it has not been so satisfactory south of the Ohio river. Garden truck, as it is called, paid very well in Mississippi, as did also tomatoes. Strawberries did not pay well south of the Ohio river, except possibly at some few points in Kentucky and Tennessee. There has been a larger setting of strawberries in the Mississippi valley during the spring and summer than usual, in view of supplying the market during the World's Fair. South of the Ohio river the berries will be marketed before the larger crowd gets to Chicago. The setting in southern Illinois has not been materially larger than usual, and there is wisdom in that. There will be an immense acreage set to tomatoes in Mississippi next spring, especially at Crystal Springs. More than the usual acreage will probably be planted in Illinois, Kentucky, Tennessee, Arkansas, and Mississippi. If there should be any unusual sickness in Chicago next year, cholera, or any other epidemic, tomatoes will go begging for a market. The men who put out about their usual amount every year, whether of fruit, grain or vegetables, are the men who generally make the most money."

The time cannot be remote when the tomato will be shipped to Europe in a fresh state. It already reaches the London market from the Canaries. An English journal makes the following record of tomato importations in January, 1892:†

"Tomatoes are being imported from the Canary Islands into this country at the present time at the rate of about 100 tons per week. This quantity will continue to increase, both from there and also from the Mediterranean ports, until about June, when the Spanish supplies reach the enormous figure of about 2,000 tons per week. About this time French supplies begin to come in in very large quantities, which are sold to the public at about 3d. or 4d. per pound; and last summer they were retailed in Birmingham at 1½d. per pound. At these first figures they leave a profit to all concerned. The Channel Islands send us large supplies, and from other European countries we get large quantities."

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* See Halsted, Bull. 19, Miss. Exp. Sta. Bailey, Bull. 45, Cornell Exp. Sta. 213.

† *Northern Gardener*. i. 77 (Jan. 29, 1892).

Tomatoes in Europe.

The feasibility of exporting tomatoes is indicated by P. M. Kiely, an experienced merchant of St. Louis:

"The success attending the exportations of California fruits and other perishable products suggests the tomato as being very appropriate in this connection. Indeed, the tomato can stand long shipments much better than the grapes and plums of California, and we enjoy the additional advantage of being almost 3,000 miles nearer these foreign markets (nearly half way) than the shippers in the Golden state, and it appears we do not properly appreciate the decided advantage in the matter of distance. The tomato growers of Illinois and Missouri might, for instance, load their refrigerater cars and place them in New York city in six days. The average time of steamers to Liverpool, Glasgow or London is, say seven days. Add two days for delays and placing in the markets, and we have fifteen days for the goods in transit, and any experienced packer can put up the tomato so it will stand two weeks. The climate of England, Ireland and Scotland is too cool to grow the tomato, and while the leading hotels and private families in Glasgow, Liverpool and London furnish the tomato to their guests in July and August, investigation shows that all these tomatoes come from southern France, the nearest point where a suitable climate to grow them can be found. The offerings are small in size, similar to those we get from the Bermuda Islands early in spring, and the prices they bring would prove very remunerative to cultivators in this country."

Exportation of tomatoes.

The *sweet corn* crop seems to have been very large, judging from the canned output, which is said to have been 84,745,886 cans.

Sweet corn.

In *celery*, the most conspicuous development is the establishment of the merits of a new system of cultivation, which has been styled "The New Celery Culture."[*] This system obviates the necessity of banking, by setting the plants very close, so that they bleach themselves. In a moist soil or one artificially irrigated, and which is rich in available plant food, the system has given excellent results. It will no doubt greatly popularize celery cultivation.

New Celery Culture.

Watermelons appear to have been planted in smaller areas this year than last, especially in Georgia. The short acreage was most noticeable in the later counties, as a result of the disastrous returns from late melons in 1891. The watermelon industry is rapidly increasing westward, and Colorado is now a very large producer.

Watermelons.

New mushroom. The most signal innovation of the year in the line of kitchen garden vegetables is the discovery of a new species of mushroom which was already in cultivation. An account of it was first published, with illustrations, in *Gardening* about the close of the year.[†] It was first brought to notice, apparently, by F. Boulon, a gardener near New York city. It is unlike the common mushroom in several particulars, and especially in its habit of thriving best in the summer months. The mushroom is large, with a flavor somewhat inferior to that of the ordinary kind. It was described by C. H. Peck, state botanist of New York, as *Agaricus subrufescens*, in the subsequent issue of *Gardening.*[‡]

New mushroom.

Auction sales of fruits are rapidly increasing in popularity, especially for the Florida and California products, which reach the markets in concentrated or massed consignments. The system first gained popularity in this country in New York, but it has now extended to other cities. Chicago merchants have recently adopted it. E. L. Goodsell, of New York, the introducer of the present system, gives me the following sketch: "The auction system for the sale of fruits originated in England about a century ago. The plan has become very popular there, to the extent of embracing in the sales at auction almost every kind of perishable produce that reaches the English markets. It has grown to be the popular system for disposing of perishable goods, because, first, it is

Auction sales.

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[*] The New Celery Culture. By Robert Niven and others. Rural Library Series. May, 1892.

[†] *Gardening*, i. 106 (Dec. 15, 1892).

[‡] *Gardening*. i. 124 (Jan. 1, 1893).

the honest method of sales, because publicly made; second, it is the prompt method, owing to the fact that the buyers congregate and will take any quantity of fruit or produce at the market price; third, its chief merit lies in the fact that the word auction signifies competition of the buyers in order to obtain the desired goods. By the old method of selling there is often and perhaps always a competition of the sellers to make the buyers purchase. About five years, ago after considerable experience in the English markets, I came to the conclusion that if I inaugurated the system here it would be bound to grow in popularity owing to its many honest advantages, and accordingly I started the business at my present location, and in one commodity alone its growth will show whether or not my judgment was correct. My first sales of Florida oranges at auction for a year comprised about 15,000 boxes. This last season I sold over 100,000 boxes. The first year of California fruit sales at auction there were sold 56 cars. Last year I sold 573 cars.

Auction sales.

"I am the only one that has ever attempted to dispose of vegetables at auction, and wherever I have attempted this system I have made a great success, and my increase of sales has been 100 per cent. over the first efforts. In my opinion, in a few years everything that is raised from the ground in the way of perishable fruits or vegetables will be disposed of at auction.

"At first, in the various markets of the country, the plan was considered absurd, but the fact that in every market of any size in the United States there are now auction houses, is a good indication that the plan has grown in favor, and within a short time every market will have such an establishment to dispose of all its perishable receipts. The most prominent fruits sold at auction at the present time in quantity are oranges and lemons from California, Florida and Europe. After that other California fruits follow, and then eastern products. In California the growers are unanimously in favor of the auction system. In Florida, about 75 per cent. of the producers favor it. From the Hudson river and in sections that have heretofore disposed of their products by private sale system, we are now getting consigments which are likely to grow into a very large business."

New features in transportation are perhaps the most signal triumphs relating to horticultural practice. The shipment of Tasmanian apples has been fully explained in previous volumes,* and reference has been made to the possible influence of the Caucasus region,† and to the vegetable gardens of the Canaries, which sell their products in the English markets.‡ The latest of the remote territories to startle us with important consignments to English markets is South Africa. February 4th, 1892, a cargo arrived at London, comprising various fruits, which brought good prices. A second cargo arrived Feb. 9th, with peaches, grapes, cucumbers, tomatoes, pineapples, and other products. In March, South African apples are reported to have sold at 7s. 6d. per box of 36 fruits. Pears sold for greater prices. The region in Cape Colony adapted to fruit raising is apparently practically unlimited, and it is probable that the early product may seriously interfere with the later sales of American apples.

South African fruits.

A venture of greater importance to Americans, however, is the successful transportation of green fruits from California to England. In 1891, one or two private trial shipments were made for the purpose of making sure of methods of carrying and refrigeration, but it was not until the present year that any public demonstration was made. All preliminaries had been carefully made by E. R. Hutchins, vice-president of the California Fruit Transportation Company, of Chicago, and the shipments went forward in steamers of the White Star line. The first "export fruit train" left Sacramento at 10 o'clock on the night of July 19, 1892, laden with pears, peaches and plums, and decorated with streamers and American and English flags. The *London Grocer* speaks of the arrival as follows:

California fruits in Europe.

"The first shipment of fruit from California arrived in Liverpool on Wednesday [Aug. 3], in the White Star steamer Majestic, comprising 2,802 boxes of pears, peaches and plums. With the exception of some (two or three boxes) of the peaches, the rest of the fruit is in remarkably good condition, and it is hoped that the prices which will be obtained for it at the public sales will render this new departure a thorough success." The fruit was placed on sale, according to a contempory report, on Friday, Aug. 5, fruit sales-in Liverpool rooms, Victoria St., by the receivers, James Adam, Son & Co., and consisted of 1,068 boxes of Bartlett pears, 656 boxes of peaches, and 27 boxes of plums and prunes. The salesroom was crowded with buyers, and as the fruit was new to them, they offered and bought with a great deal of caution. Prices were as follows:* Bartlett pears, A. T. Hatch, 7/6 to 11/9; Cook & Langley, 10/- to 11/6; C. W. Reed, 6/9 to 11/-; Gregory Bros. & Co., 6/- to 8/9. Peaches, Early Crawford, C. W. Reed, 7/3 to 8/-; A. T. Hatch, yellow cling, 5/- to 9/-. Columbia plums, A. T. Hatch, 2/- to 2/6; German prunes, 1/6 to 2/-; Victoria prunes, 1/- to 2/9; French prunes, 1/9; Prince of Wales prunes, 2/9; Moorpark apricots, 2/9; nectarines, 3/- to 5/-; yellow egg plums, 3/6.

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*Annals for 1890, 9. Also, Annals for 1889, 10; 1891, 9.

†Annals for 189[illegible], 10.

‡Annals for 1891, 21; also this volume, p. 38.

California fruits in Europe.

Mr. Macfee, in opening the proceedings, explained that the company, which has for some time past been sending Florida fruit, had how commenced the season for the finer fruits peaches, pears, plums, etc., of California. The fruit would speak for itself, and its high standard would be maintained, and he hoped buyers would give such prices as would encourage the trade. Arrangements had been made for sending over a regular consignment every week, and dealers could depend upon having a supply to satisfy their customers. As they could see, the fruit was the choicest in the world, and they might look forward to an extensive and highly remunerative business. He then introduced E. R. Hutchins, who spoke of the extent of California, its climate and general adaptability to fruit growing.

The second consignment also met with good returns. "The demand was, all circumstances considered, very good, and prices were fair and ranged from 9s. to 12s. 9d. per box of 40 pounds of pears. The peaches and plums sold readily, the peaches at 8s. to 9s. 9d. per box of 20 pounds, and the plums at 9s. to 10s. per 20-pound box."

Mexico.

California is also finding a promising output in Mexico for nursery stock, especially for grapes. Mexico is capable of great horticultural development, and the time must come when it will be a powerful competitor with the southern states in the fruit-markets of the country.† Others of our southern

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*A box of pears weighs 40 lbs; of peaches and plums, 20 lbs.
†For a sketch of Mexican pomology, see Annals for 1890, 32

neighbors may be expected to make demands upon our markets as soon as northern energy and capital utilize their vast resources. The horticulture of Trinidad was briefly outlined in a previous volume.* The Bahamas must be considered as important future competitors in both domestic and foreign markets in certain products.

Fruits in the Bahamas.

In his latest report to the Colonial Office, the Governor, Sir Ambrose Shea, according to the London *Times*, states that the Bahamas offer great inducements for fruit-growing. Pineapples are at present the principal crop, but the particular description of land required for their culture is a limited quantity. Of late years the growth has been much improved by the use of fertilizers, with a considerable increase of quantity. The crop yields large profits. At twopence each an acre of pineapples returns £40 to £45, and though precarious, from its perishable nature, while such results are possible it will continue to be an attractive pursuit. The Governor does not, however, desire to see it extended, as the sole means of the cultivators, beyond its present limit ; for the increasing competition of Cuba and Jamaica is a further element of insecurity in the future of this industry. In oranges a good business might be done, if the accounts of Florida enterprise in this fruit are a fair criterion. At present the oranges of the Bahamas are roughly handled, being generally shipped in bulk in vessels' holds, and often without compartments. The fruit is equal to any in the world, and when, for the most part, it receives no attention ; the result of careful cultivation could not fail to be renumerative. The facilities for production are fully up to those in Florida, and the colony is entirely free from all risks of frost, which so often blights the Florida crop. The success of the industry in this colony would be partial, however, until the proper system of packing were adopted to insure delivery at market in good condition. With this point secured and the advantage of steam communication, which is fast becoming available, orange growing should be a profitable source of employment. Tomatoes are grown to a moderate extent, but the production might be largely increased, and when more intelligent enterprise from abroad, of which the prospect is now encouraging, is brought to bear on various opportunities for steady money making in the colony, its history will become distinguished for more than the transformation its famous fiber is effecting. It is to be regretted, the Governor remarks, that of the many young Englishmen who embarked in orange growing in Florida, with chequered results, and those also who sought their fortunes in South Africa, some at least had not found their way to this colony, where energy and thrift applied to the varied resources can hardly fail to be rewarded, and where personal rights and property are under the protection of British laws and administration, a consideration to which the history of the southern republics during the past two or three years has given striking significance.

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* Annals for 1891, 13.

The development of Australian fruit-growing has been rapid during recent years. The "Year Book of Australia" for 1892 gives the following round-up of the fruit interests :

Australian fruit-growing.

"The experience of the irrigation colonies at Mildura, South Australia, and elsewhere, has established the fact that by means of systematic irrigation—the rivers and other sources of water supply being utilized for the purpose—nearly every description of fruit can be produced in luxuriant abundance, and at as low a cost as in California (the leading source of American fruit supply), and where the irrigation system has reached the highest point of development known in modern times. At Mildura the progress made is very remarkable. At the end of 1890, 1,817 acres were planted with fruit trees and vines, and at the close of 1891, 3,970 acres were planted-making a total of 5,787 acres. The estimated output of canned and dried fruits in 1893 is 390 tons, and in 1,904 it is an, ticipated it will reach 78,000 tons. At present the two leading crops in Australia are grapes and oranges. The latter was introduced as far back as 1817, and the former about seven years later. Since those periods there has been considerable fluctuation in the number of acres under vine and orange cultivation, but during recent years there has been a steady annual increase, the present areas of production being as follows :

ACRES UNDER ORANGE CULTIVATION IN AUSTRALIA.

	1889-90.	*1890-91.*
New South Wales	9,847	11,288
Queensland	1,194	1,231
South Australia	7,437	9,736
Total	18,478	22,255

"Taking the pound as the unit of weight for table grapes, we have the subjoined figures:

AUSTRALIAN GRAPE PRODUCTION (TABLE USE).

	1889–90. Lbs.	*1890–91. Lbs.*	*Increase. Lbs.*
N. S. Wales	6,610,240	7,470,400	860,160
Queensland	1,967,667	2,404,863	437,196
S. Australia	9,011,408	12,612,768	3,601,360
Victoria	6,655,936	7,297,360	642,424
Total	24,245,251	29,585,391	5,340,140

Fruits in Australia.

"The progress of the orange growing industry is equally remarkable. Taking the dozen as the unit of calculation, and estimating the contents of each case at fifteen dozen, we have the following results:

ORANGE PRODUCTION IN AUSTRALIA.

	1889–90. Doz	*1890–91. Doz.*	*Incr. Doz.*
N. S. Wales	11,074,392	11,562,000	487,608
Queensland	560,564	913,759	353,195
S. Australia	625,830	671,430	45,600
Total	12,260,786	13,147,189	886,403

"The quantity of oranges produced in Victoria is not officially given. The next two leading fruit crops are apples and pears, of which Tasmania is the principal grower, producing in 1890–91 368,986 bushels of apples, and 23,204 bushels of pears. During the previous year, the season being more favorable, the quantities were—apples, 503,013 bushels, pears, 29,828 bushels. Two other considerable crops are pineapples and bananas, the cultivation of which, for market purposes, is confined to Queensland. The quantity of pineapples produced in 1890–91 was 253,349 dozen, against 227,785 dozen during the previous year; and of bananas 22,002,092 dozen, against 4,993,517 dozen in 1888–90, an enormous increase. Considerable quantities of cherries, strawberries, raspberries, apricots, peaches, nectarines, lemons, passion fruit, plums, damsons and other fruits are also produced, but have no place in the official returns. The fruits, as a rule, are large and luscious, and equal to the best qualities met with in the London markets, the prices being considerably lower."

The fruit interests of Australia are greatly stimulated by government bounties. Any settler who will undertake to plant ten acres in raisin grapes or currant grape vines will be paid £20, half of it the first year, and the balance at the rate of £5 for the two succeeding years. A further bonus of £5 a ton will be paid on all raisins and currants produced, the sum paid to any single person or association not to exceed £100 annually. For planting figs and prunes, a bonus of £3 an acre is offered, and for every ton of the fruit dried £5 in addition will be paid for each hundred weight of such fruit exported. A bonus of £3 an acre is also offered for the planting of the following fruits: Apples, almonds, apricots, cherries, citrons, currants, figs, guavas, gooseberries, loquats, lemons, limes, medlars, mulberries, nectarines, nuts, olives, oranges, peaches, persimmons, plums, pears, quinces, raspberries and shaddocks. For each case of such fruit exported 2 shillings will be paid. For the encouragement of the establishment of canneries a bonus of £100 will be paid to any person who shall preserve not less than twenty tons of fruit, and £3 a ton will be paid for all the surplus over twenty tons. On all preserved fruit exported to a foreign market, a bonus of 30 shillings per hundred weight will be paid in addition. For planting olives a bonus of £3 per acre is offered, with a further payment of 1 shilling for each gallon of oil made. For peanuts a bonus of £2 an acre is offered, with a further bonus of 1 shilling for each gallon of oil made.

Australian fruit bounties.

This practice is opposed to that of California, where trees are taxed, being considered as improvements upon real estate. The trees are taxed before they come into bearing, as well as afterwards. The following schedule of valuations is now in use: Fruit trees, first year, $15 per acre; second year, $20; third year, $30; fourth, $40; fifth, $50. Citrus trees, first year, $50 per acre; second year, $75; third, $100; fourth, $125; fifth, $150; sixth, $200; seventh, 225; eighth, $250: ninth, $275; tenth, $300; eleventh, $325; twelfth, $350; thirteenth, $375: fourteenth, $400. Vines, first year, $15 per acre; second year, $20; third, $35; fourth, $40; fifth, $50.

Californian fruit-taxes.

Germany. The condition of fruit growing in European countries needs to be well studied by American exporters, for the foreign fruit crop greatly influences the market for American products. The present condition of fruit growing in Germany was discussed recently by R. Goethe-

Germany.

Geisenheim, from whose writing the remaining portion of this chapter is condensed:*

Many attempts to improve the methods of fruit culture have been made in Europe and America during the past two or three decades. The United States has been particularly active in the work, and many valuable results have been obtained. The time has been short, but the advancement so rapid that but few growers, as a rule avail themselves of their opportunities.

Fruit gardening in Germany.

This neglect to adopt modern views is very noticeable in Germany. The growers do not appear to be alive to the various ways in which fruit can be put upon the market. There is more or less uncertainty regarding the disposal of fruit, and often it is sold with very little profit, or even with none.

An example of this has recently been given in the matter of evaporating fruits. It was said by the manufacturers both of America and of Germany that the fruit may be most advantageously disposed of when evaporated, and all growers were strongly advised by the manufacturers to prepare their fruit for market in this manner. It was said that only by this means could foreign competition be met. Although evaporating fruit is an excellent method of preparing it, still the returns have been overestimated, and other profitable methods for preparing fruit for market have unfortunately been neglected.

In all districts where fruit is not entensively grown the objection to the industry is that on the whole it is not profitable, and therefore could not be recommended to the owners of land. This statement is based upon the fact that during ten years the following apple crops have been obtained: Two good ones, 3 medium, 3 poor, and 2 total failures; in addition to this, every 20 or 25 years the trees are severely injured by frost, and large numbers of them are destroyed outright. The injury done by the shade of the trees to other crops grown upon the ground must also be considered. Besides, in years of plenty the abundance of fruit cannot be disposed of, even at a low price. Often it has been used as food for stock. During years of scarcity the prices are high, but the quantity of fruit is not sufficient to make up for the losses of other years.

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* Ueber die gegenwärtige Lage des Obstbaues in Deutschland. Mitt. der Deutsch. Landwirt.-Gesell. Aug 17, 1892.

These objections, which are only too well adapted to check advances in fruit culture, can for the most be easily answered. If the figures which show the average yield are correct there exists no particular drawback to the profitable culture of fruits, for with other crops, other injurious influences are present. The abundant years are not more frequent, and the years of failure are not less common. Certainly the untoward influences are increased in those localities in which the plants have been set in poor soil or in some unfavorable location, or if the proper varieties have not been selected. It is equally certain that in favorable localities and in fertile soils the returns derived from properly managed fruit trees can be made very satisfactory.

Fruit-growing in Germany.

During years of plenty, when the sale of fruit is slow and the price sinks so low that further sales scarcely seem possible, then the grower should still be in a position to utilize the surplus. It may even be well to be prepared to handle large quantities of fruit so that the price for the fresh article may not fall below a certain point. Wherever the complaint is made of too great yields, there the preservation of fruit is not understood, and where these latter methods are understood, there no fears are entertained of too great yields or of too low prices. The district of Frankfurt-Sachsenhausen, as is well known, produces large quantities of fruit, yet even in the most abundant years the price per cwt. does not fall lower than 3 marks* for wine apples, because each of the large apple-wine factories of the above places consumes enormous quantities of fruit. The kingdom of Württemberg has 7,000,000 fruit trees, and still the price of apples per cwt. has fallen under 2 marks only once in the past 30 years, while on the average it ranges from 3 to 15 marks. The price is kept from falling by the constant demand of the wine establishments.

It must also be remembered that the value of land is often doubled and even trebled by the presence of orchards. In the region of Ehrenbreitstein, near Koblenz, the well known and valuable variety, Rheinische Bohnapfel, is almost universally planted, as here the conditions for its best development

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* **A mark is 23.8 cents.**

Mo. Bot. Garden.
1895.

are found. Consequently the yields are larger and more frequent, so that the growers of the district can say: "If the Bohnapfel yield well we are satisfied, even though the field crops have not yielded a good harvest." Thus we see that fruit culture in the above district is more important than general agriculture, and its value is thoroughly appreciated. The question may arise, how low the price of fruit may fall and the industry still be a profitable one. The answer is influenced by the value of the land as well as by the climate and soil; probably it would be safe to say that under ordinary circumstances and with average yields as given above, the price of 3 marks per cwt. is sufficient to make fruit culture profitable. In this estimate no account is taken of the decided influence which man exerts upon his trees by plentiful manuring and careful cultivation. The frequency of good yields can in this manner be largely increased.

Fruit-growing in Germany.

The high rates charged by railroads for the transportation of fruit deserves serious consideration, for it often happens that good crops are obtained in one part of the country while in distant provinces the yields may be total failures. A few years ago the fruit crop in eastern Prussia was excellent, and the surplus would have commanded good prices in southern Germany, where but little fruit was produced. Fruit dealers and wine merchants from Württemberg took steps for the purchase of the fruit product of eastern Prussia, but they were prevented from coming to any agreement with the Prussian dealers because the freight to Württemberg would have amounted to fully as much as the price of the fruit. Low freight rates would very much increase the shipments of fruit to various parts of the country, and as a result, fruit growing would receive wonderful encouragement. Thus far all efforts which have been made by the fruit growers and associations to lower freight rates upon fruit have been unsuccessful. The managers of the railroads claim that any reduction in freight rates would be of as much value to importers of fruit as to these living within the country, so that really the German growers would derive but little benefit from such a change.

This condition of affairs is very unfortunate for the German fruit industry, and it appears to be very doubtful if lower freight rates can be obtained. All growers in Germany must put more dependence upon the preservation of fruits. That part of the crop which cannot be sold at home can, when dried, readily be shipped to other districts, since the dried fruit occupies so much less space and is so much lighter than the fresh product, consequently it can be shipped much cheaper.

As regards the objection that trees are injured by frost, it must be admitted that occasionally much damage is done. Nevertheless, something can be done to lessen it. Hardy varieties should be given the preference, and if trees are imported, they should be obtained from countries at least as cold as the one in which they are to be grown. In this manner the heavy losses which sometimes occur from frost can be reduced to a minimum.

Fruit-growing in Germany.

Injury is also done to crops grown in the shade of trees; still the value of the trees is five or six times greater than the amount of injury done by them, and the proper treatment of the tops, and the planting of varieties growing rather slender and upright, would do away with a large part of the losses. Such plants as the sugar beet are, of course, excepted.

The most weighty objection to the development of the fruit interests of Germany is the importation of fruit from all parts of the world. It is brought into our markets at such low prices that it is impossible for the German grower to compete with it successfully. In southern lands particularly fruit is produced under much more favorable conditions and also much cheaper than here; besides, the productive years are more numerous on account of the warmer climate, and this more than makes up for poor cultivation practised in those countries. The injurious influence of these importations affects particularly those fruits which cannot be cultivated with profit throughout Germany but only in warmer districts. The more important of these fruits are peaches, apricots and chestnuts. The prunes raised in Bosnia, Servia and Dalmatia ripen better and are consequently much sweeter than ours. They have the further advantage of selling at lower prices than would be profitable for the home grown product: consequently the demand for them is strong.

Italy, on account of the Gothard railroad, can bring early peaches into our markets some days earlier than can be done from the Rhine district; and the beauty of southern table fruits, especially those from South Tyrol, so attracts buyers of fruits that they neglect or overlook our native fruits, although their flavor is decidedly better than that of the southern products. These unfavorable conditions will have still greater importance if the tariff upon foreign fruit is lowered.

It would be very unjust to give fruit culture a second place in our agricultural pursuits on account of the objections just mentioned. There are a great many fruits which succeed so well in Germany that foreign competition will effect them but little, if at all. The German dessert apples can never be excluded from our markets for any length of time, on account of their superior flavor. Morello and other sour cherries are famed for their rich flavor, and pears succeed so well in some parts of the country that the foreign article can be dispensed with. Nevertheless we cannot get along without foreign fruit, for when our crops fail the countless preserving and evaporating factories must obtain their required supplies. The amount of fruit imported is mainly determined by these factories, for in such regions as Württemberg large numbers of them may be found, and they are prepared every year to manufacture certain quantities of fruit wine. During the three months from September to November, 1881, 7,004 carloads of fruit were shipped into Württemberg; of these, 5,688 came from Austria and Switzerland. On the average, five marks were paid per cwt. Our growers should aim to supply the home demand in the future so far as it can possibly be done, and all plantings which are made should be of such a nature that future importations will be diminished.

Statistics of German fruit-growing.

Statistics of the importation and exportation of fresh, dry and preserved fruits show that much remains to be done. The statistics have been made public by the Royal Minister of Agriculture for Prussia. They show that the exportation of fresh fruit from the years 1880 to 1889 was 2,494,513 dcwt.,* while the importation was 5,980,864 dcwt. This is 3,486,351 dcwt. in favor of the exports.

The difference is still greater when we consider the dry and preserved fruit, for during the same years only 40,333 dcwt. were exported, while 2,416,095 dcwt. were imported, making an excess of 2,375,762 dcwt. in favor of the importers.

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*A dcwt. equals a double hundred weight (*doppelzentner*), and is here considered as the equivalent of 100 kg. (kilograms), which really are 220.462 pounds avoirdupois.

According to these figures, the yearly importation of fresh fruit would amount to 598,086 dcwt. If we estimate the value of 100 kg. at the low figure of 6 marks, then we find that there was made an annual payment of 3,588,516 marks to foreign dealers. The yearly importation of dried fruit was 241,609 dcwt. If a dcwt. is valued at 50 marks, a very moderate figure, we find that the annual foreign payments amounted to 12,080,450 marks. Another point to be noticed in the above figures is the omission of the cost of transportation. The total annual payments made to foreign countries for fresh, dried and preserved fruits undoubtedly amount to 15,668,966 marks.

German fruit statistics.

Upon closer inspection of the statistics of fresh fruits, it will at once be seen that Austria is credited with an annual importation of 379,928 dcwt.; Switzerland follows with 108,710 dcwt.: the Netherlands, 40,478; Belgium, 22,775, and Italy with 19,724 dcwt. The greater part of the Italian importations consisted of oranges, early peaches, and filberts. The figures should be considered as averages only, for they vary more or less, according to the character of the yields during different years. Lately America has also imported dessert apples in considerable quantities.

The present exportation of fruits from Germany is as follows: Great Britain, 44,944: The Netherlands, 23,766; Switzerland, 15,120 and France, 13,836 dcwt.; in addition, Denmark received 8,000, Russia 4,171, and Sweden 3,432 dcwt. But these exportations are more than counterbalanced by continually increasing importations.

As regards dried and preserved fruits, Austria sent us 168,661 dcwt., this being the greatest amount sent from any one country. Servia follows with 27,151 dcwt. These two countries supply the greater part of the inland markets with prunes which, as a matter of fact, we cannot produce so cheaply and only rarely so well. The other countries which import dried or preserved fruit into Germany are given in the order of their importance: America (evaporated apples), France (prunellos), Netherlands, Belgium and Italy. The importations from Austria, Servia, America and Belgium are steadily increasing.

As already stated, our exportation of evaporated and preserved fruits is very small, and the shipments made to Switzerland are the only ones of any importance. But even Switzerland now sends us more than she receives.

These statistics of the importations of fresh, dried, and preserved fruits indicate strongly the necessity of supplying the home market with our own product. Otherwise considerable sums of money must go to other countries for fruits which, for the most part, might be produced at home. While in other countries great stress is laid upon the increase of exports, in Germany the most important question is how to reduce the imports. Statistics show that the demand for fruit and fruit products is steadily growing, and a wide field is open to those who would engage in the occupation of supplying the home markets. This increased demand for fresh fruit is partially due to the natural increase of population of the empire and to a greater desire of the people for fresh fruit.

German fruit-growing.

Better methods of preparing the various products obtained from fruits has also increased the demand for the latter. This is especially noticeable is the case of wine made from apples. The factories of Frankfurt-Sachsenhausen and vicinity ship considerable quantities of wine to northern Germany, and since it has been discovered that the wine will keep in tropical countries, considerable quantities have been shipped to Trindad, Sumatra, and to the most distant islands of the Pacific. It seems as if the peculiar acidity of the wine is particularly valuable in hot countries. Our marine service also consumes more and more evaporated fruit, and without doubt a profitable trade in these articles could also be carried on with the colonies. The demand for apples is also increased by other processes of manufacture. Reference is here made particularly to the kraut factory, which every year uses considerable quantities of apples, especially the sweet varieties. Apple-kraut is in some sections considered a necessary article of diet. This applies particularly to the lower Rhine districts. This article will be used in much larger quantities and the demand for it will be largely increased when the eastern and northern parts of the country have once become acquainted with its merits. Among the greatest consumers of fruit may be counted the factories which preserve it, and their number has increased during the past five years to a very gratifying extent. Formerly the demand for preserved fruit was supplied almost entirely by foreign goods, because the methods of manufacture were not known or only imperfectly understood in this country, but the many factories in western Germany have now shown that their products can compete successfully with those from foreign lands. The welfare of these factories depends upon the abundant production of fruit, and their number could be considerably increased if a sufficient supply of the raw material could be obtained at home. On the other hand, the output of the factories is greatly reduced if the fresh fruit must be imported, as is still done in the case of apricots and Morello cherries. Large quantities of good varieties of these two fruits should be raised, if only to supply the demands of factories.

Fruits in Germany.

The trade in fresh fruits makes certain demands upon fruit growers. Those demands are not often complied with, but the growers must give them attention before German products will occupy the same position in the commercial world which those from other countries now enjoy. Thus far dealers have avoided home-grown fruit, because it has not been handled to meet the requirements of our markets. Fruit from foreign countries, as for example southern Tyrol, is properly packed and shipped, and is consequently a standard article. In recent times much has been said about avoiding the regular fruit dealers, and to have fruit markets in their stead, or to form associations for the preservation of fruits. The advantages to the producer of such arrangements cannot be doubted, and it is to be hoped that these enterprises may flourish and bring to the growers the desired gains. But the profits obtained under these circumstances can only be depended upon in case experienced business men have charge of the various enterprises.

All things considered, it will readily be seen that a reduction of the present fruit areas is not to be thought of. Statistics show a gradual increase in areas devoted to fruit culture. The demand for fruit is also steadily increasing, so that no one need fear overproduction. The use of fruit in various forms should be encouraged at every opportunity, and methods of growing and using fruits should be fully developed. If this work is well done the areas devoted to fruit can easily be made twice as extensive as they now are, and the demand for the product will in all probability be as good, if not better, than at the present time.

§ 2. *Ornamentals.*

The year.

State flowers.

The floricultural interests of the year show, for the most part, a steady increase in trade and popularity. The public appreciation of ornamental gardening and the artistic values of plants is now increasing with such steady progress that it has become a subject of common remark. Perhaps the most conspicuous single innovation in technical methods which has gained much prominence during the year, is the apparent establishment of the merits of the short-span-to-the-south forcing-house, which is thought to have decided advantages over the common forms of houses, both for flowers and vegetables. The movement for national and state flowers, while not specifically floricultural, is still worthy of note here. This movement is about four years old.* Many flowers have been pressed for a national emblem. The most conspicuous candidate which has come forward during 1892 is probably the columbine. Congressman Butler, of Iowa, introduced a resolution in Congress late in the year designating the pansy as the national flower and arranging the stars upon the national flag in pansy form, but the resolution was not adopted. The Senate of Minnesota passed a resolution naming the moccasin flower, cypripedium, as the state flower. At its July meeting, the Oregon State Horticultural Society named the Oregon grape (*Berberis Aquifolium*) as the state emblem. In Washington the plant is often called Washington holly.

Roses. In America three plants greatly outstrip all others in popularity—the rose, chrysanthemum and winter carnation. The two latter plants were already honored by national societies at the opening of the year,† but the rose has received similar recognition during 1892. The first call for a rose society appeared in the *American Florist* for May 19, 1892,* over the names of E. G. Hill, J. N. May, M. A. Hunt, Robert Craig, J. C. Vaughan, Ernst Asmus, Antoine Wintzer, F. R. Pierson, Edwin Lonsdale, John Burton and J. T. Anthony. The objects desired in such an organization were declared to be:

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* See Annals for 1889, 82. Annals for 1890, 35.

† The Chrysanthemum society was organized in 1889 (see Annals for 1889, 89), and the Carnation society in 1891 (see Annals for 1891, 59).

Rose society

"First: to stimulate and encourage the raising of new varieties of roses in America by the offering of prizes and by other recognition on the part of the society.

"Second: to establish and encourage rose exhibitions throughout the country and, as soon as practicable, to hold a national rose show or exhibition each recurring year.

"Third: to establish a proper and intelligent method of classification, and to authoritatively weed out of our lists worthless and undesirable varieties.

"Fourth: to give better opportunity for rosarians to become acquainted and to dicuss methods and the varied matters of interest pertaining to the growth and the finest development of the rose." A meeting looking to the organization of a rose society was held in August in Washington, at the time of the meeting of the Society of American Florists, but a permanent organization was postponed, although definite preliminary steps were taken in the formulation of constitution and by-laws.

The following review of some of the newest roses is written for this volume by E. G. Hill, Richmond, Indiana:†

New roses.

"*Kaiserina Augustine Victoria.* (H. T.) Pure ivory white, a strong, free grower, with very handsome buds. Probably a formidable rival for Bride among the forcing roses; one of the most attractive roses of recent years.

"*Augustine Halem.* (H. T.,) Has all the freedom of the Teas, both in growth and bloom. Dark crimson in color, of good build; very double, and deliciously sweet.

"*Danmark.* (H. T.) A seedling from La France, quite similar in color, but of the rounded form of the best Hybrid Perpetuals.

"*Madame Pernet Ducher.* (H T.) The first distinct yellow Hybrid Tea; a very promising sort.

"*Madame V. Menier.* (H. T.) A strong, free grower, with large foliage; flower large and double, and of a lovely shade of pink.

"*Madame Angelique Veysset.* (H. T.) "Striped La France." One of the most beautiful of variegated roses; rose and white, otherwise identical with La France. (Annals for 1890, 49.)

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* A preliminary announcement was made in the issue of April 28.

† See also Rose, in list of Introductions, Part II.

"*H. Plantagenet.* (H. T.) Bright china rose; needs further trial.

"*Lady H. Grosvenor.* (H. T.) One of the late Mr. Bennet's fine seedlings; flesh color, large and globular; a nice grower.

"*Madame Caroline Testout.* (H. T.) The most noted rose of the year from the florist's point of view, being a fine forcer; of the general style of La France, but a high bright tint of pink which never purples. (Annals for 1891, 204.)

"*Medea.* (Tea.) Bright lemon yellow, with dark heavy foliage like Perle des Jardins. Useful for bedding.

"*Edouard Littaye.* (Tea.) Strong and vigorous, after the general style of Mad. Cusin; very free; color especially fine.

"*Elise Heymann.* (Tea.) Light yellow, shaded to nankeen and rosy peach. Free growing; promises to make a good breeder.

"*Madame Louis Patry.* (Tea.) Deep purple rose, shaded china rose; fine in form and substance. A very nice grower.

New Roses.

"*Grand Duchess Hilda.* (Tea.) Nankeen yellow, shading to ochre. Moderate in growth.

"*Senateur Loubet.* (Tea.) Dwarf but vigorous; very large, finely formed flowers; outer petals light, tender rose, center metal-yellow color, heightening sometimes to crimson.

"*Berthe Clavel.* (Bourbon.) A striped sport from old Souvenir de la Malmaison. Color creamy white, with rose center; reverse of the petals striped violet and light rose. The above is the raiser's description. I have had blossoms answering the description, and I think this a novel and useful new rose.

"*General Berge.* (H. P.) Strong, vigorous growth, producing large, finely formed flowers of exquisite shape. Brilliant currant red, shaded silvery maroon. Very fragrant and free-flowering.

"*Salamander.* (H. P.) One of the leading prize winners of the year. Flowers bright scarlet crimson. Very vivid in summer, and a free autumnal bloomer. A brilliant and most effective rose, either for the garden or exhibition purposes.

"*Frere Marie-Pierre.* (H. P.) Seedling from Baroness Rothschild, having both the habit and foliage of its parent. Flowers very large and double, produced singly. Color beautiful china rose. Very finely scented.

"*President Carnot.* (H. P.) One of the notable new roses of the year. Color bright rose, shaded silvery carmine. A distinct and beautiful rose in every respect.

"*Madame Edouard Michel.* (H. P.) A rose after the style and growth of Mad. Luizet, but of a clearer and brighter color, with more regularly formed petals. Splendid for forcing.

"*Spenser.* (H. P.) Flowers beautiful satin pink, the outer petals shaded and reflexed with white. This will prove a good forcing and exhibition rose. Splendid for the garden also.

"*Margaret Dickson.* (H. P.) Winner of the gold medal for best new rose at National Rose Society's show, in England. This rose is almost a pure white in color, strong in growth, and quite free flowering. The finest Hybrid rose of recent years. (Annals for 1891, 76.)

"*Zenobia.* (Moss.) Flowers fine satin rose color, very soft and pleasing; buds finely mossed, and exceedingly fragrant. A splendid addition.

"*Crimson Globe.* A superb hybrid Moss; the growth bold, the leafage ample, and the flower of large size, globular in form, and quite full, producing bloom in large clusters; the color rich, glowing crimson.

"*Captain Basroger.* (Moss.) Bright carmine crimson, shaded with blackish purple. Very large, and of fine, globular shape. Very free flowering. (Annals for 1890, 46.)

"*Duke of Fife.* (H. P.) Rich crimson scarlet; in every other way identical with Etienne Levet, from which it is a sport.

New roses.

"*Duchess of Fife.* (H. P.) Color soft silvery pink, quite a new shade; a sport from Countess of Roseberry.

"*Janet's Pride.* (Sweet Brier.) Semi-double, crimson lake, with lighter shadings; very beautiful in bloom and foliage; very sweet.

"*Frances Bloxham.* Hybrid China (?); bright salmon pink; a lovely pillar rose."

Chrysanthemums. The noteworthy chrysanthemum history of the year is the sending of flowers from New Zealand to England frozen in cylinders of ice. The blooms, representing six varieties, were sent from Wellington by John Earland, and they were exhibited in good condition before the Floral Committee of the National Chrysanthemum Society of England, at the Royal Aquarium, Westminster, in the fall of 1892. The ice was enclosed in tin cans of the size of fruit cans, and when the cylinders of ice were slipped from the cases, the blooms were found to be preserved in excellent condition. The exhibit was awarded two first-class certificates, and three varieties were commended. The varieties are described as follows by an English writer:*

Chrysanthemums in ice.

"Rimutaka, slightly hairy, not unlike M. R. Bahuant, described by the sender as like Lord Wolseley, with broader petals (commended). Lady Bell appeared a blush variety, but I was informed it was white, similar to Lady T. Lawrence (commended). Sarawera, a fine yellow; two blooms were exhibited, and the committee did well to award a first-class certificate. J. J. Kerslake I see did not put the color down, but it was commended. Zelandia; a couple of blooms were sent of this variety, evidently a silvery lilac, reverse of petals bright pink, a fine variety; first-class certificate. Tongariero, pink reflexed Japanese, the smallest flower sent; a pretty thing, but as exhibited too small."

The compliment was returned by sending to New Zealand a collection of frozen prize winners from the Westminster show. These are to be exhibited at the meeting of the Wellington Chrysanthemum Society in April, 1893.

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*J. B. R., in Brit. Gard. viii. 180.

In America, perhaps the most important venture of the year was the inauguration of a movement for an international chrysanthemum exhibition to be held in Chicago. A meeting was held at the World's Fair headquarters Monday, January 25, 1892. Some twenty gentlemen were present from Indiana and Chicago. After considerable discussion the following resolution was passed:

International chrysanthemum show.

WHEREAS, The World's Columbian Exposition closes October 30, 1893, too early for the annual chrysanthemum show of that year; and

WHEREAS, These annual shows have become the greatest and most popular medium of expression of public interest in horticulture; therefore, we recommend that the Department of Horticulture arrange for the International Chrysanthemum Show in the horticultural building, under the auspices of the American Chrysanthemum Society, opening November 3 and continuing 15 days. Suitable medals and premiums should be provided, which, in the judgment of your committee, could be fairly done for an amount, say, not exceeding $12,000.

The registration* of chrysanthemums with the secretary of the American Chrysanthemum Society (Edwin Lonsdale) for 1892 was as follows:†

BY N. SMITH & SONS, Adrian, Mich.—Niveus, Mrs. M. W. Redfield, Redondo, Ermenilda, Alba Venus, Miles A. Wheeler, Dr. H. D. Hull, Parthenia, J. A. Pettigrew, Ingomar, Expansus, Insoletus, Uncle John.

Registered chrysanthemums.

BY E. G. HILL & CO., Richmond, Indiana.—A. T. Ewing, Amber Queen, Anna Woods, Geo R. Gause, Jennie Williams, Joey Hill, Judge Hoitt, Miss Lydia Hopkins, Maud Dean, Mrs. J W. Crouch, Pres. Wm. R. Smith, Robt. McInnes, W. G. Newitt, W. N. Rudd.

BY THOS. H. SPAULDING, Orange, New Jersey.—A. A. Sturges, American Flag, Ada Strickland, Bryden Jr., Emily Ladenburg, Miss M. Simpkins, Mrs. Dudley C. Hall, Martha Duryea, M. B. Spaulding, Eiderdown, Mrs. J. M. Schley, Snowflake, Wyndmoor, Walter Hunnewell.

BY FRED. S. WALZ, Cumminsville, Cincinnati, Ohio.—Ætna, Comrade, Cardinal, H. L. Sunderbruch, Lena Walz, Miss Bettie Fleischman, Perle, Ruby, Robert J. Murphy. The Queen, Theodore Bock, Wm. Bolia.

BY FRED. DORNER, Lafayette, Indiana.—Armida, Mrs. Chas. Duhume, Sarah Hill.

BY DAVID CLIFFE, Germantown, Philadelphia.—J. H. Cliffe.

BY H. W. RIEMAN.—Bynum Schiltges, Ernest Rieman, Irma.

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*For the introductions of 1892, see the List of Introductions, Part II.

†At a meeting of the American Chrysanthemum Society, held in Washington in August, 1892, it was voted that the secretary annually furnish Annals of Horticulture with an official list of the registrations of the year.

By Peter Henderson & Co., New York.—Golden Wedding.

By Wm. Tricker, Dougan Hills, S. I., N. Y.—Thos. H. Brown, Fairview, Flossie, Judge Addison Brown, Judge Chas. L. Benedict.

By Mrs. E. Suder, Toledo, Ohio.—Lisbeth (or Elizabeth).

By John N. May, Summit, New Jersey.—Creole, Faltstaff, Fascination, Gloriana, Illuminator, Jeanette, Miss Francis Thorley, Miss Sue T. Price, Mr. Jingle, Summit, Temptation, Truth, Calendula, Old Homestead, Portia, Sans Peur, Wang, White Gem, William Simpson.

Registered chrysanthemums.

By Pitcher & Manda, Short Hills, New Jersey.—Mrs. F. L Ames, Mrs. Leslie Ward, Mrs. Bayard Cutting, Mrs. Walter Cutting, Mrs. W. P. Henszey, Mrs. W. C. VanHorn, Whitestone, Mrs. Henry Graves, Mrs. J. T. Anthony, Mrs. Katherine Bell Lewis, Mrs. James T. Closson, Miss Baldwin, Imperial Castle, Imperial Favorite, Master of the Garden, Louis Menand, W. J. Palmer, Mr. Ed. G. Nihlien, John White, Lady Florence, La France, Mr. Joseph Clark, Burnham Squier, Mrs. Wm. Trelease, Gertie.

By Herbert Tong, Erie, Penna.—Mrs. C. H. Strong, Daybreak, Wm. Brewster, Pink Coral, Dr. B. D. Schlandecker, Cascade, Lizzie Tong, Charlotte Russe, Tong Jr., Rayon d'Or, Emma Laura T., War Paint, Silver Cloud, Fairy Queen.

By J. C. Vaughan, Chicago.—C. R. Gallup, Mrs. Jessie C. Knox.

By George W. Miller, Chicago.—Miss Margaret Miller, Wakenda, Argenta.

By T. D. Hatfield, Wellesley, Mass.—Lady Playfair, Albion, Excelsior, Col. Robt. G. Ingersoll, Westward Ho.

The following survey of chrysanthemums in 1892 is written for this volume by B. M. Watson, Jr., Bussey Institution, Harvard University:

Chrysanthemums in 1892.

"The season now closing has been unequalled; the unusually bright weather and a temperature which made fire heat almost unnecessary have given a combination not always, unfortunately, to be depended upon, and the result has been most satisfactory. All lovers and cultivators of the plant are encouraged, and, as there is no sign of a falling off in popularity, the dealers are satisfied. Prices have been variable: good flowers have been sent to market in greater abundance than ever before; the best have been sold without trouble at paying rates; inferior stock has been a drug and unsalable at any price. There is always a demand for fine blooms; growers must bear this in mind more particularly. Only first-class material is likely to give profitable returns.

"It is the large flower with the long, stiff stem which is in demand; the larger the flower, the stiffer the stem, the better. It is the Japanese chrysanthemum which, almost exclusively, fills the show windows and covers the exhibition tables. The

Chinese seems to be passing out of cultivation, following in the tracks of the fast-disappearing anemone and pompon. This is a pity, when so great a variety is obtainable, few flowers presenting so many different phases. It is to be regretted that more attention is not given to cherishing these highly desirable classes.

House chrysanthemums.

"Very little progress has been made in growing plants suitable for use in living rooms. The magnificent specimens seen at the shows are altogether too costly for home use; a medium-sized plant, which could be retailed at from one to five dollars, would add much to the present popularity of the chrysanthemums by increasing the number of the families which thus might join the ranks of the growers.

Chrysanthemum shows.

"A feature of the season has been the large number of exhibitions, both public and private, or semi-private, many dealers taking this pleasant method of displaying their stock. In this way, a more extended interest in the plant as a plant, and not as a producer of cut-flowers, is likely to be developed. The shows of the various horticultural societies and florists' clubs have been well attended, and, generally, with good financial results. These exhibitions have not only given the local gardeners opportunity to show their skill and compare notes on matters of cultivation and choice of varieties, but they have been used by the larger growers from distant places as a means of displaying new seedlings. Both plants and cut-flowers were everywhere much better than in any previous year. This superiority was manifest in the nearly uniform excellence of the different contributions. The variations in the displays heretofore noted have, to a great extent, disappeared, showing that, as one would expect, decided improvements have been effected in methods of cultivation. As regards size of individual flowers, perhaps it is not too much to say that a diameter of ten inches was frequently seen. It is stated that the plant shown in New York by Mr. Hatfield was from six to seven feet across, which is pretty good for such a hard subject as Mrs. Alpheus Hardy. At the Boston show, a total height of fifteen feet was claimed for some standards. This must be considered as proof of a much better understanding of cultural requirements.

When one is consulted about varieties with an idea to making a list which might help a beginner in his selections, he is very much at sea; their name is legion, and the matter is going from bad to worse. If anybody doubts this, let him go over the carefully written reports of the exhibitions which appear in the trade papers, the *American Florist* and the *Florist's Exchange*, and try to make a list of the sorts shown which were of sufficient importance to be mentioned by name, in the hope of thus being able to find out which are really the best kinds to recommend for general cultivation. Such an investigator would find, after a deal of work, that there were some varieties, named below, which appear as prize-winners, or receive particular commendation, sometimes for one thing sometimes for another, at almost every show from Boston to Minneapolis, from Montreal to Washington. Some of these date back five or six years, a few perhaps longer, but the greater number by far are very new, and what is more, are largely local. A table made up on some such plan would show fifty sorts say, taking front rank in every exhibition. But many other names would appear as prize-winners which were by no means common to many shows, but which for some reason or other had proved successful in a particular place. The names of many foreign-grown plants would appear in both these classes, but it seems as if there was a tendency to do away with these introductions from abroad. It looks as if the chrysanthemum of the future would be American grown; there is by no means the same number of imported varieties among the novelties which would have been noted even three years ago.

Show chrysanthemums.

"The number of seedlings shown for the first time this year is uncommonly large. In many respects they are highly satisfactory. Although no great advances have been made, the improvements, both in color, form, and probably in habit of growth, seem decided. Through the enterprise of the growers these new plants have been shown at most of the large exhibitions. Among them, as apparently worthy of a trial the coming year, the following should be mentioned: Golden Wedding, yellow, Peter Henderson & Sons: Mrs. F. L. Ames, yellow, Pitcher & Manda: Niveus, white, Nathan Smith & Son; The Queen, white, F. S. Walz: J. W. Crouch, Amaranth and Robert McInnes, bronze, E. G. Hill & Co.: Pride of Englewood, pink, John Keane; Emily Ladenburg, scarlet, F. T. Underhill; this last has been shown before, but is not yet on the market. Mr. J. N. May received the first prize at

New chrysanthemums.

the New York show for a set of 35 seedlings, one, by the way, Black Prince, being described as 'dark as a Prince C. de Rohan rose.' In the west, E. G. Hill & Co., Fred. Dorner, H. W. Rieman and others received certificates for many seedlings not yet offered for sale. In the Philadelphia show Mrs. Craig Lippincott, an early large yellow, attracted much attention. There were not so many seedlings at the Boston show as were to be found elsewhere. Oxblood, red, G. R Gill, and Newmarket, large white, C. D. Kingman, were noteworthy. Altogether, the crop of new varieties is abundant.

Recent chrysanthemums.

"Among last year's introductions, in whites, Mrs. Jerome Jones and Mrs. Robert Craig; Mrs. L. C. Madeira, yellow; Geo. W. Childs, crimson; Edw. Hatch, pink; Harry May and Col. W. B. Smith, bronze; Harry Balsley, soft pink; Emma Hitzeroth, lemon-yellow; Maud Dean, pale pink, and Roslyn, pink, have all attracted much attention, and helped their growers to good prize money. Viviand-Morel, rose, is superb, and makes a fine show flower. This variety, of French origin, has been a frequent prize taker at the English shows. It was introduced to this country by L. Menand, of Albany, and first grown in quantity by John H. Taylor, Bayside, Long Island.

Older chrysanthemums.

"Among the older sorts, W. H. Lincoln was perhaps more often noted than any other one kind, with Ivory a close second. In the English horticultural journals it is noticed that W. H. Lincoln makes a good showing at the exhibitions; so do others of the Neesima collection. H. E. Widener is near the top, and so is Domination; other good whites are: L. Canning, Robert Bottomley; and yellows, Kioto, Grandiflorum, Gloriosum, E. G. Hill. Miss Minnie Wanamaker, white, has proved most useful; nothing had promised better. Ada Spaulding, Mermaid, Mrs. Irving Clark, Lizzie Cartledge, Mrs. J. N. Gerard, Lilian B. Bird are still to the fore among pinks. Cullingfordii is not yet superseded. In the Boston shops, Geo. Gordon (L'Africaine) proved serviceable as an early bloomer. F. Thompson and L. Boehmer make interesting exhibition plants, and so does Rohallion. Etoile de Lyon is sometimes successfully grown. Tokio and Souce d'Or have been seen occasionally, but that good old favorite, Jardin des Plantes, seems lost. Mrs. A. Hardy took the Dean prize at New York. With her, in the hairy class, besides L. Boehmer, we have Wm. Falconer, Miss Annie

Manda, W. A. Manda and Mrs. L. D. Ward. None of these are easily handled, apparently, except by expert growers. In *Garden and Forest*, p. 595, Vol. V., will be found a list of late-blooming chrysanthemums, contributed by J. D. Hatfield, W. K. Harris and Edwin Lonsdale: whites, Ethel, Molly Bawn, White Cap, Mrs. Humphreys, Mt. Blanc, Potter Palmer, Flora Hill and Mrs. John Wescott; yellows, Mrs. H. J. Jones, Mrs. Isaac Price, Goldfinder, Gloriana; seedlings, '92, J. N. May, Gold, Miss Eva Hoyt, Mrs. H. G. Pennock and Dr. Covert; pinks, Syringa, John Lane, Mrs. Charles Dissell; C. B. Whitnall, claret, O. P. Bassett, crimson, and Marvel, pink and white.

Chrysanthemum varieties.

"One could go on to much greater length with these names, but on looking back through earlier numbers of the Annals, and seeing how few of the varieties once recommended survive, it seems unprofitable to continue. Much information in this direction can be obtained from the horticultural periodicals. There is in the *American Florist* for Nov. 17, No. 233, a list of the most prominent varieties in cultivation here, with comments by such good growers as John Thorpe, Robert Craig, W. K. Harris, E. A. Wood, Ernst Asmus and A. H. Fewkes, a most valuable contribution to our knowledge on this matter, and moreover up to date, of great help in weeding out undesirable sorts. In the *Florist's Exchange* for the November weeks will be found tabulated lists of the prize winners in the principal shows.

Cultivation of chrysanthemums.

For cultural details, there is little new to be said. For large flowers, plants are grown in the houses, giving them as much air as possible during the summer; growing in boxes in the open air is an advantage in some respects, and is probably easier than growing in pots; this practice does not seem to have increased so much as one would suppose. Larger flowers can be obtained from pot-grown plants, as was evident in Mrs. Atkinson's exhibit at the Boston show. Field culture is not likely to give the fine specimens which competition now makes necessary. Late struck cuttings, last of June, from healthy plants are used by the best growers; three or four flowers can be carried on a good plant, but the disbudding takes up a great deal of time. It seems highly desirable to pay more attention to growing plants in small pots, six to eight inch, for use in houses; some growers obtain good returns from stock of this description. The chrysanthemum spray is a beautiful object, and in that form the natural stiffness and formality of the flower are less conspicuous; the process of disbudding necessary to obtain the large bloom destroys this beauty. Why will not some of the expert growers consider this point, and endeavor to develop the possibilities in this direction?

Desired chrysanthemums.

"Apparently, there has not been so much trouble this year as before with the leaf-hoppers. Whether it is an off-season for the bugs, or whether the preventives and remedies used are more effective, cannot be stated with certainty."

Carnations. The registration* of carnations with the secretary (C. J. Pennock) of the American Carnation Society for 1892 has been as follows:†

Registered carnations.

BY GEO. CREIGHTON, New Hamburgh, New York.—Netherwood, bright scarlet; King Dianthus, white; Rob Roy, red; Village Maid, blush, marked carmine; Crimson Coronet, crimson; Peachblow Coronet, white, diffused with pink; White Coronet, white.

BY JOHN MCGOWAN, Orange, N. J.—Senator McPherson, red.

BY MARTIN CUMMINGS, Reading, Mass.—Governor Russell, white.

BY MESSMORE & TURNER, Geneva, O.—Minerva's, Pink.

BY FRED. DORNER, Lafayette, Ind.—Madame Diaz Albertini, light pink; Mrs. Elizabeth Reynolds, pink; Richmond, dark rose; Esther, light pink; Blanch, white; Spartan, brilliant carmine; Wabash, crimson; Lafayette, carmine.

BY C. J. HAETTEL, Redondo Beach, Cal.—Striped Unique, pink, striped white; J. W. Wolfskill, rosy flesh; Sirius, scarlet; Lois J. Haettel, pure white; Mrs. Londsdale, rosy flesh, blended lighter; Leon Gambetta, deep scarlet.

BY A. E. HEMPSTEAD, Maspeth, N. Y.—Laura Hempstead, bright pink.

BY J. G. & A. ESLER, Saddle River, N. J.—Rosalie, rich pink, shaded white.

BY JAHN BROS., New Bedford, Mass.—John R. Renere, variegated; Wm. Pierce, Sr., pink; Josiah Eaton, Jr., white; Pink Beauty, light pink.

An estimate made by Richard T. Lombard, a prominent carnation grower of Massachusetts, indicates that some two hundred millions carnations were sold during the year, yielding above one million of dollars to 4,000 growers. Some of the more noticeable features of this industry are considered for this occasion by Edwin Lonsdale, president of the American Carnation Society:

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*For introductions of carnations in 1892, see list of Introductions, Part II.

†At the meeting of the American Carnation Society at Buffalo, February, 1892, the secretary was instructed to furnish an annual official list of registrations to Annals of Horticulture.

"Carnations are still holding their own in popularity, coming in a good second to the rose, and so long as improvements continue, either in better varieties, better culture, or methods of handling, they will increase in popularity. There have been very few changes in the mode of cultivation, so far, but it would not surprise me to see a change similar to that made in the chrysanthemum, and before long. Consider that less than ten years ago chrysanthemums were planted in the open ground in spring and potted in the fall, and then consider what great improvements have been made in that short time in culture and varieties. This is the way in which the carnation is now handled, but we shall eventually grow them in-doors the year round. Last summer I tried a few plants under glass, with very satisfactory results. Others who have tried them also report a similar experience.

Carnations in 1892.

"In disbudding carnations, there will not be the same advantage gained as we have found in chrysanthemums. In my own experiments I have found that the flower has not been made much larger, but the stem has seemed stiffer and the petals had more substance. Further experiments and closer observations will be necessary, however, before a more decided opinion can be given on these points. One advantage in disbudding is secured by removing the terminal bud and all the lateral buds excepting three, taking care to have them at the same stage of development, so that the flowers may be expected to open at about the same time. The stem of a carnation will never be so stiff, I imagine, as to impair its gracefulness.

Disbudding carnations.

"There are so many experimenters in the field at this time raising seedlings, that we must not be surprised to see startling results spring up in some unexpected place at any time. Grace Wilder, for instance, being a delicate pink, was very popular, as that color is much sought. It has some defects. The raisers of seedlings bent their energies towards improvement in that color. Much success has crowned their efforts. There are Grace Battles, Edna Craig, Wm. Scott, and some others, all of which are essentially the same in line of color, but the flowers are larger, and there are other merits in them which show what may be done by intelligent effort. We want an improvement on Portia as a scarlet variety. The plant is generally a healthy grower and a free bloomer, but the

Raising new carnations.

Raising new carnations.

flowers are too small. Fred. Dorner, scarlet, is too coarse, and its tendency to burst the calyx seems greater than it did the first year it was introduced. In all my experiments in the raising of seedling carnations, I have carefully selected for breeders those varieties which have little or no disposition to burst the calyx and those having broad petals instead of those having a great number. It is much better to have a given number of petals well disposed than to have a confused mass of petals; the latter flower lacks high character. Cæsar has some excellent qualities as a breeder, but its color is not good, and it certainly possesses too many petals. It has a good stem, a strong constitution, and, for a flower having so many petals, its tendency to burst is not great. Much to my own mortification and disapointment, I have never found a variety which was entirely free from this fault of bursting the calyx.

New varieties may be unstable.

"Some years ago, the first flower of one of my own seedlings pleased me greatly. It was beautiful in form and distinct in color, a large flower, stout stem, and it did not burst the calyx. I raised every cutting from it. When the plants flowered the following year, much to my displeasure and discomfiture, the flower which did not burst its calyx was the exception and not the rule, and it has never yet produced a flower equal to the first one. When a plant is in its juvenile state it is not advisable to even hope that it may prove to be a winner. Two years ago a rather small plant, a seedling carnation, produced a flower of good proportions and excellent form, and well marked, but nothing remarkable promised. A dozen or so cuttings were rooted. Next year it promised still better, and this year it is exceptionally good in every way. It will render a good account of itself in the near future. It often takes a new variety three or four years to prove itself. The raising of seedlings is an expensive luxury, if it be carried on in anything like a large scale. But there is a mild form of excitement attending it which is thoroughly enjoyed by the enthusiast.

Prices.

"The prices for carnations have not ruled so good this year as last. This has been brought about by the supply being somewhat greater than the demand. The drought of last summer and autumn was influential in producing a less rampant growth than is usual in a more moist season; that is to say, it made a semi-ripened growth, which is believed to conduce to the production of flowers rather than to growth. Grace Wilder, which has held its own for so long on account of its peculiarly delicate pink color, has, I think, been too plentiful in the New York markets this year for the first time. Over production and degeneration in that variety is thought to be the principal cause in this case. So many of the flowers lack what might be termed freshness that it is no wonder the demand for it is falling off. It is destined to be superseded, and that very soon, by improved varieties in the same line of color. Buttercup is conceded to be the best of its color—yellow, marked with bright red—and it is also one of the oldest varieties in cultivation in America. We may go further, and say that it is not only the best of its color, but one of the very best varieties in the whole list of canations. But, unfortunatly, it succeeds only in very few places. My own experience with it dates back nearly to the time it was disseminated by the raiser, the late Chas. T. Starr. I have tried it in two widely different localities as regards soil, a stiff stubborn, clayey loam, and one that is largely made up of mica. But no success followed. It would not flourish outdoors in summer time. Last fall I procured plants from two different successful growers; they were in good, thrifty condition when received, though not very large, and they have rendered a good account of themselves up to the present time. Portia is the standard scarlet, but we are hearing whisperings of hope in many quarters that it will soon be displaced from the proud position it has occupied for some time, and something larger and, if possible, brighter, will take its place. Hector is pronounced one of the best carnations ever raised; but it does not sustain that high character away from home. Lady Emma was the popular scarlet some years ago, but owing to a somewhat delicate constitution it has about run out. One by that name is grown by some growers for the New York market. It is not the true Lady Emma, however. It was decided by the committee on nomenclature of the Society of American Florists, at the meeting held in Washington last August, to be a selection of Portia. It certainly does partake of the character of Portia, and not at all of that of Lady Emma, the latter not having the same bluish cast to the foliage, which is one of the characteristics of the famous Portia, nor are the flower stems so stout and erect. As to whites,

Carnation market.

Commercial varieties.

Lizzie McGowan, Mrs. Fisher and Silver Spray are dividing the honors, Lizzie McGowan taking the lead in some sections of the country, and Mrs. Fisher and Silver Spray in others. But there is room for improvement in all of them. Daybreak, salmon pink, has leaped into popularity with both grower and retailer. This is the test of the true worth of a variety. It has a strong-growing habit, stout stems, a well-built flower, and it is of a pleasing color."

Novelties of 1892.

New plants of 1892. The progress of any year in floricultural matters is capable of somewhat accurate measurement by a consideration of the extent and variety of the introductions of new plants. I shall, therefore, introduce somewhat minute accounts of the novelties of 1892,* presented by different observers. These discussions are from English writers, and they indicate very closely what has been the direction of progress in European countries during the year. American novelties have already been discussed so far as roses, chrysanthemums and carnations are concerned, and a full descriptive list of all our introductions will be found in Part II. The following account of European novelties, which now first appears in print, is from W. J. Bean, of the Royal Gardens, Kew.

"For many years past the largest and most important additions made to cultivated ornamental plants have belonged to the orchid family, and to one who comes to deal with the new plants of 1892, it soon becomes evident that the introductions of that year have formed no exception to the rule. It is questionable, indeed, whether it would any longer pay commercially to send out collectors for the sole purpose of introducing stove, greenhouse or even hardy plants, notwithstanding the great and increasing popularity of the last-named class. At the same time it is evident that orchid importers have latterly found it good business to give more attention to other types of plants, and we owe the introductions of a goodly number of our best new stove species to the fact that firms which a few years ago concerned themselves exclusively with orchids now make it an important, if secondary, part of their collectors' duties to secure new and beautiful exotic plants belonging to other groups.

"On the whole, it may be said that the past twelvemonth has seen the introduction of several plants of sterling value which are certain to become permanent occupants of our gardens; in two or three instances, indeed, their first appearance almost produced a sensation. The usefulness of the Royal Horticultural Society's meetings at Westminster for bringing novelties, either of home or foreign origin, to the notice of the gardening world, and having their value appraised by competent judges, has been more than ever apparent, and not since Lindley's time, probably, have the shows of the society been so uniformly interesting and valuable as during 1892. The activity which has been displayed for several years past, both by professional and amateur hybridists, has been more marked than ever, and the results of their work constitute an important division of the new plants of the year. Messrs. Veitch & Sons, of Chelsea, who will always be remembered as the pioneers of this branch of horticulture, still maintain the first place in the ranks of English hybridizers. Not only have they been at work among orchids, but rhododendrons, nepenthes, amaryllis and streptocarpus have all been enriched by new and beautiful varieties as the result of their skill. I have already drawn the attention of American readers (*American Garden*, Jan., 1891) to the new streptocarpuses as likely to prove extremely useful plants. The race, which originated at Kew, has, during the last two years, been energetically worked upon by Messrs. Veitch, and is now grown in every garden of note in this country; the reports of their new cultivators speak strongly in their favor.

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* A good account of the novelties of the year will also be found in *Gardener's Chronicle*, Jan. 7 and Jan. 14, 1893.

Novelties of 1892.

"*New Orchids.* Taking first the new importations from abroad, the orchid which has proved the most striking of the year is *Cypripedium Chamberlainianum.** This beautiful plant, which is remarkably distinct from any other cypripedium in cultivation, was introduced by Messrs. Sander, of St. Albans, from New Guinea. It is indeed the most encouraging discovery in the plant world that has yet been made in that island, which is one of the few remaining areas of any size that can be expected to yield new plants differing materially from those we already possess. *C. Chamberlainianum* is a robust plant, with broad, strap-shaped leaves of a rich green color. The flowers are borne on erect scapes two feet high, and as many as from twelve to a score have been counted on one scape on

Cypripedium Chamberlainianum.

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* For list of illustrations of this plant, see Plant Portraits, in Part II.

native specimens. Each flower is about five inches across, the sepals being yellowish white, marked with rose-purple stripes and dots; the petals are twisted and stand out horizontally at each side, and are spotted with crimson on a white ground. The slipper is white, but almost covered on the lower part with soft rose-colored spots. A pubescence on several parts of the flower adds to its striking character. This is an orchid which no collection should be without. The rest of the new cypripediums deserving of mention are hybrids. From forty to fifty of them have flowered and been named, but it is only necessary to mention the most distinct. One of them certainly is *C. Evenor*, raised by Messrs. Veitch from *C. bellatalum* and *C. Argus*. It is one of the few hybrids raised from *C. bellatalum*, and is both distinct and handsome. *C. Laurebel* is also the offspring of *C. bellatalum*, the other parent being *C. Lawrenceanum*; it was raised by Sir Trevor Lawrence, president of the Royal Horticultural Society. *C. Telemachus* is a pretty variety raised from *C. niveum* and *C. Lawrenceanum*, and in the same group must also be placed *C. Arete*, whose parents are *C. concolor* and *C. Spicerianum*. *C. niveum*, *bellatulum* and *concolor* are members of a compact group of lady-slipper orchids as beautiful as they are distinct. They are, however, not the most easily cultivated, and it is gratifying to see them in these hybrids combined with robuster strains. The species hitherto mentioned are of the Asiatic section, but the South American branch of the genus has also been enlarged. Perhaps the best of these is *C. Brysa*, raised from *C. Sedeni* var. *candidulum* (itself a fine hybrid) and *C. reticulatum*; the flowers are blush colored. Another likely to prove useful is *C. Perseus*, raised from *C. Sedeni* var. *porphyreum* and *C. Lindleyanum*. The worst of these hybrids is that even with the quickest-growing of them it will be a good many years before they are plentiful enough to become available for general cultivation. But there is no reason, especially in your sunny land, why every cultivator who has the time and conveniences should not raise his own. There is perhaps no work in the whole range of horticulture so interesting as this.

New cypripediums.

"A very remarkable new bulbophyllum has been introduced to Kew. It is called *B. comosum*, and is a native of the Shan states of Burmah. It is the only species as yet known with white flowers, which are also singular in being covered with

Bulbophyllum comosum.

short white hairs. It is in flower here at the time of writing, and I consider it the best species in the genus.

New cattleyas.

"The noble genus cattleya has been increased by several lovely species and varieties. The year 1891 will always be memorable in orchid-lore on account of the re-discovery and introduction of the old and much valued *C. labiata* (*vera*). The past year has not only proved its value for beautifying our orchid houses during autumn, but has also seen the species itself supplemented by some magnificent varieties. One named *Sanderæ* has pearly blush sepals and petals, the lip being white at the margin and violet crimson on the center; another variety called *alba* is pure white. *C. Statteriana* is a species of the *gigas* set, and is near *C. Hardyana;* the outer segments of the flower are almost white, whilst the lip is a gorgeous combination of crimson, yellow, and purple—certainly one of the finest orchids of the year. Belonging to the same group as *C. Statteriana* is one which has been named *C. Oweniana.* It has the large flowers characteristic of this section of cattleya, the lip being of a deep, rich crimson, veined with gold. Both of these have been imported by Messrs. Sander & Co. *Cattleya Victoria-Reginæ* is a new species, with tall slender stems. Its flowers, which are said to be borne in clusters of upwards of a score, are 6 inches in diameter; the sepals and petals are a soft, rosy crimson and the lip is white at the base but shot with rose, the front portion being violet. A species nearly allied to the preceding is *C. Alexandræ*, but, so far as has been shown at present, is much inferior. *Cattleya speciosissima*, a well known and handsome species, has been added to by a pure white variety named *Sanderiana;* it has the delightful fragrance of the type.

Cattleya hybrids.

"Three hybrids between lælia and cattleya have flowered and been named during the past year, and four or five have to be added to those already raised by inter-crossing species of cattleya. All these, as would naturally be expected from the genera worked upon, are very handsome. Two of the cattleya hybrids are especially worthy of notice, as they are raised from *C. Mossiæ* and *C. iricolor*, the latter a very rare species which I have only seen in flower once, and which is quite distinct from any other cattleya that I know. These hybrids (which are called *Philo* and *Philo albiflora*) may be the means of representing *C. iricolor* in our gardens when that species has disappeared, an instance of which has already occurred in the case of *Calanthe Dominii*, the first hybrid orchid ever raised, one of whose parents, *C. furcata*, has long been lost sight of. *Cymbidium Winnianum* is a promising hybrid raised from *C. giganteum* and *C. eburneum*. It has long spikes of ivory white flowers, the lip being prettily spotted with crimson; *C. Humblotti* is a new species of considerable interest on account of its presence in a wild state in Madagascar (where, hitherto, no conclusive evidence of the existence of the genus had been known). Its flowers are striking rather than pretty, being colored green and black.

New orchids.

"To lælias a valuable variety has been added in *L. anceps* var. *Oweniana*, which has larger and more richly colored flowers than the type species; the sepals and petals are rosy purple flaked with white.

"The beautiful *Odontoglossum crispum*, the most popular of all orchids, still continues to be enlarged by new varieties, and those of 1892 are not inferior to the finest of their predecessors. Variety Rex has exceptionally large flowers, the segments, which are normally white, being of a rosy shade, and blotched conspicuously with a rich chocolate color. Another delightful form, which has been named Sanderæ, has the flowers almost covered with rosy crimson. Nearly every colored species of orchid has now its albino form, and it is not surprising, therefore, that the old *Vanda teres* should at last be made complete in this respect by a white-flowered form, named alba. No new species of dendrobium worthy of note has been imported, but some ten hybrids have flowered during the year. *D. barbatulo-chlorops* is a natural hybrid whose compound specific name indicates its most probable parentage. *D. Rolfeæ*, raised from *D. nobile* and *primulinum*; *D. Nestor* from *D. Parishii* and *Dayanam*; *D. Euryclea*, from *D. Wardianum* and *lituiflorum*; and lastly, *D. Burfordiense*, from *D. Linawianum* and *aureum*, may be mentioned as the more important garden hybrids.

Ferns.

"*Ferns*. The popularity of any class of plants is always to be measured by the number of new additions made to it, either of home or foreign origin. What we term popularity, however, never affects the great majority of private gardens, so far as the plants of everyday use are concerned, and the more useful ferns are just as indispensable as ever they were, and just as much grown. Any new fern, consequently, that is of sterling merit is freely purchased, although it does not appear with the same *eclat*, and does not fetch such a price, as an orchid of proportionate intrinsic value does. The following meager list of new ferns does not, therefore, in the least indicate the dying out of this lovely class of plants from cultivation:

New ferns.

"*Adiantum macrophyllum* var. *albo-striatum*, is a handsome new form exhibited at Westminster during the summer; its pinnules are striped with creamy white, on a deep green ground. *A. elegantissimum* is a very graceful-habited sport from *A. cuneatum*. *Athyrium setigerum* is a promising new species, exhibited by Messrs. Birkenhead at the Begonia Conference at Chiswick in August. *Nephrolepis davallioides* var. *multiceps* is a very handsome crested form, whose distinctive character is indicated by the varietal name. *Pteris tremula* var. *variegata*, as well as *Pteris reginæ* and *P. cristata* (the two last sports from the lovely *P. Victoria-Reginæ*—itself a comparatively new fern) are all the productions of Mr. H. B. May, of Edmonton, London, who has done very good work amongst ferns during the last few years. His establishment, with its hundreds of thousands of ferns in every stage of growth, is one of the most interesting places in London for a plant-lover to visit. *Lycopodium Mooreanum* is a new and very distinct species of club-moss—a native of North Brazil—which would be worth obtaining by the few who cultivate this curious group of acrogens.

New stove plants.

"*Stove Plants*. The most interesting stove plant of the year is a bigeneric hybrid which has been called *Urceocharis Clibrani*. It was produced by crossing *Urceolina pendula*, an amaryllidaceous plant, with yellow flowers, and the well-known *Eucharis Amazonica*. The plant is intermediate between the two parents, which are, however, so different from each other that there is plenty of room for a distinct species between them. The flowers are two and one-half inches long, broadly campanulate and pure white, and the scape bears about a dozen of them in a loose umbel. Everyone who has has seen this hybrid describes it as a plant of singular beauty.

"The genus aristolochia, which had previously been almost entirely unrepresented in any except botanic gardens, was forcibly brought to the notice of gardeners by the marvelous

Aristolochias and utricularias.

A. gigas a year or two ago. This year another species, *A. clypteata*, has been illustrated in *The Gardener's Chronicle.* It has been known for a good many years on the continent, but is practically new to England. Its flowers are six inches across, yellowish white, heavily mottled with purple. Another flowering plant deserving of note is *Thunbergia grandiflora* var. *alba*, a white variety of the species, introduced to Kew. Two curious but extremely beautiful species of *Utricularia* or bladderworts, viz., *U. Humboldtii* and *U. longifolia*, have received first-class certificates from the Royal Horticultural Society. The former has pale lavender-blue flowers, the latter pale mauve. These plants are semi-aquatic, and being frequently grown with orchids and of somewhat similar appearance, are very often thought to belong to that family.

"The remainder of the stove plants to be enumerated are those whose beauty is in the foliage—a section that has always been a more important one in the house than the flowering group. *Aglaonema costatum* is a new and pretty addition to the aroid family, introduced by Messrs. Veitch from the Malayan region. Its leaves are dark, glossy green mottled with spots of a clear ivory white. Two new dichorisandras have been exhibited by Linden, of Brussels: *D. angustifolia* has long, narrow leaves, which are deep green penciled with pure white; *D. musaica* var. *gigantea* has larger leaves than the old musaica, but they are similar in marking.

New stove plants.

"*Dracæna Sanderiana* has green leaves striped with white and covered with a glaucous bloom. *Maranta Sanderiana* has shining bronze-colored leaves, striped obliquely with cream color and pink. These two were conspicuous in a group of twelve new plants shown by Messrs. Sander at the International Exhibition of Horticulture in London, May 27, 1892.

"One of the most promising palms introduced in recent years is *Ptychoraphis augusta*, which was sent to Kew from the Nicobar Islands last year. It belongs to the pinnate-leaved group. A new podocarpus, *P. pectinatus*, has been imported from New Caledonia by Messrs. Sander, which is likely to prove a useful decorative plant. It has minute leaves an inch long by one-eighth wide; dark green, marked with a white line at each side of the mid-rib, the under surface being silvery.

"*Greenhouse Plants.* I do not know whether the popularity of callas (or richardias, as they should more properly be called) is as great in the United States as in Great Britain. But here the old *R. Æthiopica*, often called lily-of-the-nile, is grown more or less in every garden possessing a glass-house, and in market-growing establishments it is also cultivated in immense quantities to supply the flower markets of London and other large cities. Up to within the last two years this white-flowered species was the only one of any use for general work, but since that time no less than four new species or forms with yellow flowers have been, or are about to be, put in commerce. The first of these was *Richardia Elliottiana*, which was exhibited at Westminster three years ago, and for the stock of which several hundred pounds was offered. During the past year, however, it has been somewhat eclipsed by a new species quite distinct from it, which has been called *Richardia Pentlandii.* Its spathes (commonly called flowers) are of a rich buttercup-yellow, and as large as those of the old white species. This is undoubtedly the most noteworthy greenhouse plant of the year, and it is to be hoped that it, as well as *R. Elliottiana*, will soon exist in sufficient quantities to be available for general cultivation. Within the last month of the year it was announced that a Monsieur Deleuil, of Marseilles, had raised a hybrid between *Richardia albo-maculata* and *R. hastata*, both thirty-year-old plants in gardens, but neither of them much grown. This hybrid is also said by its raiser to have fine yellow flowers, and is thought to be identical with *R. Elliottiana.* Before anything definite, however, can be said on this point or on its horticultural value, the plant itself must be seen. Equally vague, too, will have to be the reference to the fourth 'yellow calla.' In the last week of December a hundred tubers of a richardia were sold at a London auction room. They were named, provisionally, 'Pride of the Congo' and said to have been collected in Central Africa, near Lake Nyanza. None, of course, have yet flowered.

New callas.

"Of the other plants referable to this class, the following are selected as of most importance: *Chirita depressa*, introduced to Kew from Kuantung, in China; it is a dwarf plant, with rosulate leaves and purple flowers shaped like those of a gloxinia. It has been figured in the *Botanical Magazine t.* 7213. *Cyrtanthus Galpinii* is a handsome species sent to Kew

New greenhouse plants.

New South African plants.

from the Transvaal, South Africa. Its flowers are bright red, and borne in August, when the plant is without foliage. *Senecio Galpinii* is a new species belonging to the group Kleinia. Its stems are in compact tufts and bear fleshy, glaucous leaves, the flowers being orange colored. A native of the Transvaal. *Streptocarpus Galpinii* is a third plant from the same country and named after the same gentleman. Mr. Galpin is living in South Africa, and has been for the last few years one of the most successful collectors of plants in communication with Kew. This new streptocarpus is similar in style of growth to previously introduced species, having a single spreading leaf about ten inches long by six inches in width. The flower-scape is erect and carries fifty to eighty or more flowers. These flowers are of a rich, purplish blue (a color not previously met with in the genus), the throat being white. The flower is also distinct from that of any other in having the corolla tube very short and wide. Mr. Watson, of Kew, who first brought this genus into prominence, considers it the prettiest of any of the species. In an article I wrote for *The American Garden* October, 1890, I mentioned a new set of rhododendrons whose seed had been sent from Yunnan by a missionary; at that time only one species had flowered, but during the past year another reached that stage. *R. racemosum* is a very charming little plant, flowering when only six inches high. Its blooms are an inch across, pale pink and rose, and produced very freely in the leaf-axils near the upper part of the stem, thus giving them a racemose appearance. It is apparently well-suited for rockery cultivation, should it prove hardy. It has been grown in the open by Messrs. Veitch at Coombe Wood nursery through one winter, but that is a sheltered locality. During a visit I made there last autumn I saw several other of these Yunnan rhododendrons growing outdoors, some of which were showing flower buds, so it is very probable that in the course of this year we shall be able to judge whether they fulfill the great expectations formed about them.

New rhododendrons.

"*Oreopanax Sanderianum* is a new species, similar in habit to the old *Fatsia papyrifera*. It is a native of Guatemala, and likely to make a useful addition to the several species already in cultivation. Its value, of course, resides in its ornamental foliage, its leaves being of a bright, glossy green and divided into three lobes. *Tacsonia Smythiana* is a hybrid of garden origin. The flowers are like those of *T. mollissima* in shape, but are orange-scarlet in color.

New succulents.

"Three new succulent plants remain to be mentioned. *Agave Franzosini* has leaves eight to nine feet long, a foot wide in the center, tapering, a long black spine at the tip. Mr. Baker, of Kew, a leading authority on this and allied genera, describes the leaves as of the intensest glaucous hue, and the species itself as the 'prince of the genus.' I can personally vouch for its magnificent appearance, having seen it growing in the famous garden of Mr. Hanbury, at La Mortola, on the Italian shore of the Mediterranean, where it flowered last year. Its inflorescence is like a huge candelabrum and is 40 feet high. *Aloe aurantiaca*, a native of the Cape of Good Hope, has flowered in the same garden. Its habit is described by Mr. Baker as intermediate between *A. arborescens* and *A. ciliaris*. Its raceme of flowers (which, individually, are very like those of a lachenalia) are bright yellow Yet another new species from Mr. Hanbury's garden is *Yucca Hanburyi*, an acaulescent plant, with a dense rosette of rigid linear leaves, the flowers being white, bell-shaped and numerous on a raceme 1½ feet long. A native of the southern United States or Mexico.

New hardy plants.

"*Hardy Plants.* One of the horticultural surprises of the year was the first appearance of an annual shown by Messrs. Sutton, of Reading, which was afterwards determined as *Nemesia strumosa.* An illustration and description of it has already appeared in the journals, so I need discuss it no further. It is a curious fact, nevertheless, that such a striking plant, described and named by the botanist George Bentham in 1836, should have remained so long out of cultivation. Equally remarkable is the coloration of the flowers, which, except that they have no blue, range over the whole gamut of color. Any addition to the lilies could never be otherwise than welcome, more especially such a handsome one as *L. primulinum*, introduced by Messrs. Low, of London, from upper Burmah. It is allied to *L. Nepalense*, with which it may be compared in growth and foliage. The flowers, produced in a terminal umbel, are pale yellow, tinged with green outside. A bare mention of the following lilies will suffice, as I am not aware that any of them are as yet in cultivation. They have been found in Yunnan and other parts of western China by the missionaries who sent over the new rhododendrons alluded to above, and we may, therefore, hope to see them, too, in our gardens before long: *L. mirabile*, flowers narrow, white, 6 to 7 inches long; *L. formosum*, white, 6 to 7 inches long, broad; *L. myriophyllum*, white, shaped like a large cup; *L. Yunnanense*, white, tinged purple; *L. Delavayi*, wine-red, dotted with brown inside; *L. Lankongense*, flowers white or purplish, dotted with black; *Fargesii*, yellow, dotted with purple, 2 inches long; *L. ochraceum*, yellow. These names are founded on dried material and manuscript sent to Mons. Franchet, of the Jardin des Plantes, Paris.

New lilies.

"*Chionodoxa Alleni*. Whether a new species or variety is not yet certain, but probably a form of *C. Lucilliæ*, the 'Glory of the Snow.' It is described as having very large and brilliant blue flowers. No genus of hardy plants has more rapidly come into favor than these beautiful chionodoxas, which grow and multiply with great freedom in the herbaceous garden.

"*Buddleya Colvillei* is not, strictly speaking, a new plant, but it flowered in Ireland during the summer of 1892 for the first time in the British Isles, probably in Europe. It grows on the Sikkim Himalayas at elevations reaching up to 12,000 feet. The species is shrubby, of very graceful habit, and flowers at the end of the current season's growth. Individually, the flower is bell-shaped, with four recurving lobes to the corolla, and is colored pale purple."

A detailed account of the new plants of 1892 is given by W. Watson, of Kew, in *Garden and Forest**, which I reproduce in full:

The new plants of 1892.

"The new plants of 1892, although more numerous than usual, do not include many of extraordinary merit; indeed, the number of really first-rate garden plants among them is exceptionally few. I propose to deal at first only with the plants for which English horticulture is responsible, leaving the introductions of foreign establishments for the latter part of my remarks.

"*Orchids*. The new introductions among orchids are fewer than usual, and the really good acquisitions fewer still.

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* Garden and Forest, vi. 41, 52, 89.

Collectors have not been very fortunate in their discoveries, for I cannot name more than one of a first-rate character, *Cypripedium Chamberlainianum*. This plant has not yet revealed anything like the magnificence which the vendors, Messrs. F. Sander & Co., say it assumes in a wild state. It may, however, be expected to improve considerably under cultivation, and we may yet see the tall, many-flowered scapes which characterize this species, as seen by the collector in New Guinea. *C. Excel* is distinct enough, but wanting in attractions.

Cypripediums.

"The new cattleyas of last year have not yet fulfilled expectations. *C. Alexandræ* (Linden), instead of being 'one of the most beautiful of all cattleyas,' has proved so far one of the poorest, the several plants which have flowered quite justifying this view. It is hoped that these are exceptionally bad varieties. Victoria Regina is mixed. Messrs. F. Sander & Co. exhibited a plant of it in flower early in the year, which was not wanting in beauty, but, so far as I can ascertain, no one has yet had one that deserves to rank with first-rate cattleyas. *C. Schilleriana* var. *Lowii* is very distinct in color, having lavender segments and a blue and white labellum, but it looks worse than the type in constitution, and the type is bad enough. *C. Batalini* is another of the same category, being like *C. Schilleriana*, with rose-purple flowers. *C. Oweniana* (Sander & Co.), *C. Statteriana* and *C. aurea* var. *Statteriana* (T. Statter), are forms of *C. labiata* var. *Dowiana*, of which there are now a considerable number. As was to be expected, some good varieties have turned up among the thousands of plants recently imported of *C. labiata* (*Warocqueana*), and some of these have received names, such as *C. labiata* var. *Sanderæ*, *C. labiata* var. *alba*, etc.

Cattleya novelties.

"*Disa Cooperi* and *D. incarnata* are very pretty in flower, but they belong to the wrong section of the genus to be of much value in English gardens. *Bulbophyllum comosum* (Kew), from Burmah, is a pretty little species, with the habit of a pleione, and erect spikes bearing curved racemes of hairy white flowers, which develop in January and are sweet-scented. *B. O'Brienianum* (J. O'Brien) is another pretty little species, from the Himalayas, likely to interest those who love the smaller orchids.

Divers orchids.

"*Calanthe Sanderiana* (F. Sander & Co.) is a likely plant for the greenhouse, as it has the habit and sturdiness of *C. Natalensis*, but is larger in flower and deeper in color. Natal. *Epidendrum Godseffianum* and *E. Watsonianum* (F. Sander & Co.) are evidently very robust-growing species, with large-branched scapes of yellow and purplish flowers two inches across, but they are not likely to grow so well with us as they do in the Brazilian forests. New orchids. The white-flowered *Masdevallia Harryana* var. *Gravesiæ*, obtained by Mr. Sander from H. Graves, of New Jersey, is the best new masdevallia of the year. There are three promising new odontoglossums—namely, *O. platycheilum*, a new species, now in the possession of R. J. Measures, with creamy white miltonia-like flowers, the large labellum colored soft pink, with spots of purple; *O. Owenianum* (F. Sander & Co.), a large-flowered new species from Colombia, with brown-spotted sepals and petals and a pure white labellum; and *O. Wendlandianum* (F. Sander & Co.), a new species, similar to *O. blandum*. the flowers white, with chesnut spots, the labellum spotted with purple. There are improved or distinct varieties of *O. crispum* and *O. Pescatorei* this year as before. The allied genus, oncidium, also yields a trio of promising additions, all of F. Sander & Co.'s introducing: *O. Rolfeanum*, from Colombia, is a brown-and-yellow-flowered species of the microchila section; *O. Saint Legerianum*, from South Brazil, is an ally of *O. bifolium*, with long scapes of bright yellow flowers, remarkable for the size of the crest and its bright purple color, and *O. Gravesianum*, also of Brazilian origin, is one of the crispum or prætextum fraternity.

"*Phajus Sanderianus* (F. Sander & Co.) I should call a form of *P. Wallichii*, which Sir Joseph Hooker, in *The Flora of British India*, makes to include *P. bicolor* and *P. grandifolius*. *Stanhopea Lowii* (H. Low & Co.) is a large-flowered species, not unlike *S. eburnea*, I am told, but with purplish markings on the labellum. *Sobralia Lucasiana* (C. J. Lucas), *S. Breyeriana*, (Seeger & Tropp) and *S. Lowii* (H. Low & Co.) are all untried plants of apparently close affinity to *S. macrantha*. *Spathoglottis Viellardii*, var. *rubra* (Sir T. Lawrence), is a dark-colored large-flowered variety of a very good stove orchid. *Vanda teres*, var. *alba* (Lord Rothschild), is, as its name indicates, a white-flowered variety of considerable beauty—so far, the best of the new introductions.

Hybrid orchids.

"Turning now to the hybrids of garden origin, we find an enormous number, certainly running into nearly a hundred. I must, in fairness, own to a prejudice against hybrids which have nothing to recommend them beyond their mongrel character. A good hybrid is a plant to be proud of, and there are some, a few, good ones among last year's productions. The best is, I think, *Cymbidium Winnianum*, raised by C. Winn, from *C. giganteum* and *C. eburneum*, exhibited a few weeks ago by Sander & Co., bearing six spikes of large, beautiful flowers, creamy white, with blotches of red-brown on the labellum. *Cattleya leucoglossa* (*C. fausta* × *C. Loddigesii*), *C. Philo* (*C. iricolor* × *C. Mossiæ*), and *C. Minacia* (*C. Loddigesii* and *C. labiata*) are the best of the hybrid cattleyas flowered this year by Messrs. J. Veitch & Sons. The St. Albans nurserymen have also produced two good hybrids, in *C. Burberryana* (*C. imbricata* × *C. superba*) and *C. Amesiæ* (parentage not given). A hybrid named Baroness Schrœder (*C. labiata*, var. × *C. Jongheana*), raised in the garden of Baron Schrœder, is also deserving of special mention.

"There are over forty new hybrid cypripediums among the certificated plants of last year. The principal raisers of these were Messrs. J. Veitch & Sons, F. Sander & Co., and Messrs. Pitcher & Manda. There are among them some curious combinations, such as Brysa (*C. Sedeni* × *C. Boisserianum*), Chrysocomes (*C. caudatum* × *C. conchiferum*), *C. Cowleyanum* (*C. Curtisii* × *C. niveum*), Evenor (*C. Argus* × *C. bellatulum*), Juno (*C. callosum* × *C. Fairreanum*), *C. Lawrebellum* (*C. Lawrencianum* × *C. bellatalum*), Telemachus (*C. niveum* × *C. Lawrencianum*) and *C. Vipani* (*C. niveum* × *C. lævigatum*). I am informed that, strange and incomprehenensible though it may appear to outsiders, these hybrid cypripediums are much sought after by certain amateurs, and often realize very high prices. With a genus like this it would be worth while to self-fertilize the flowers and try what effect selection and cultivation would have on the size and colors of the flowers of the later generations.

"Dendrobiums have yielded *D. dulce* (*D. Linawinaum* × *D. aureum*), *D. Wardiano-Japonicum*, *D. striatum* (*D. Japonicum* × *D. Dalhousianum*), *D. enosmum* var. *leucopterum* (*D. nobile* × *D. endocharis*), Adrasta (*D. Pierardii* × *D. superbum*), and Euryclea (*D. lituiflorum* × *D. Wardianum*). These are all Veitchian productions. Messrs. F. Sander & Co. have also been successful, having flowered during the year *D. Rolfeæ* (*D. primulinum* × *D. nobile*), and Sir Trevor Lawrence has bred *D. Burfordiense* from *D. Linawianum* and *D. aureum;* Messrs. Veitch also made this same cross, calling their plant *D. dulce.*

"*Lælio-Cattleya Marriottiana* (*L. flava* × *C. Skinneri*), Phœbe (*L. cinnabarina* × *C. Mossiæ*), Aurora (*L. Dayana* × *C. Loddigesii*) and Latona (*L. cinnaborina* × *L. purpurata*) are other hybrids of promise, for most of which we are indebted to Messrs. J. Veitch & Sons.

Hybrid orchids.

"Phalænopsis Amphitrite (*P. Stuartiana* × *P. Sanderiana*), raised by F. Sander & Co., is a handsome hybrid of sturdy constitution, and the same may be said of the Veitchian hybrid, Artemis (*P. amabilis* × *P. rosea*). The production of further crosses between cattleya and sophronitis by Messrs. Veitch is only what we might have expected to follow on their splendid success in producing *Sophrocattleya Batemanni.* I have said elsewhere that the fact of these plants intercrossing is a conclusive proof of their near relationship. Still the boldness of the attempt deserves all praise, more particularly as it has given us already several beautiful hybrids. *Sophrocattleya Veitchii* (*Sophronitis grandiflora* × *Lælio-Cattleya elegans*) and Calypso (*Sophronitis* × *C. Loddigesii*) are two beautiful hybrids. Breeders might do worse than make this same cross for the sake of the plants it yields, as we shall have to wait a long while before Messrs. Veitch will have a stock of sophrocattleyas to dispose of at, say, a guinea apiece. *Zygopetalum leucochilum* (*Z. Burkei* × *Z. Makayi*), a sturdy plant, remarkable for its large white labellum, is another Veitchian production of some merit.

Stove plants.

"*Stove plants.* There were no very remarkable plants among the new introductions from the tropics last year. *Aglaonema costatum* (Veitch) is a dwarf ornamental-leaved plant, green, spotted and veined with white, the leaves ovate, about five inches long; native of Perak. *Alocasia Rex* and *A. nobilis* (Sander & Co.) are promising additions to the many kinds of alocasia in cultivation. *Begonia decora* (Veitch) is a prettily varigated little plant which is certain to become a favorite with those who are interested in the ornamental-leaved begonias. *Dracæna Sanderiana* (Sander & Co.) is an elegant plant in the way of *D. reflexa*, with the leaves prettily lined with white on a green ground. *Maranta Sanderiana* and *M. Mooreana* (Sander & Co.) are distinct-looking additions to calatheas, of which we already possess dozens of named sorts, some of which do not materially differ from each other except in name. *Nymphæa Laydekeri* var. *rosea* has won golden opinions from those who have seen the few plants, which we owe to American nurserymen. *N. gracilis*, although introduced for *N. Mexicana*, is worth a place in the aquarium, as it grows freely and produces numerous pure white, elegant, medium-sized flowers during the summer.

Stove plants.

"*Monodora grandiflora* is not new, but it flowered for the first time in cultivation last year at Kew. It is a small tree, with stout branches and oblong glaucous-green leaves, which are reddish when young. The flowers are produced singly from the axils of the leaves on their drooping peduncles, and they are formed of three long lanceolate segments four inches long, colored exactly like the labellum of *Oncidium Papilio*. *Nidularium striatum* (W. Bull) and *N. Makoyanum* (Sander & Co.) are pretty foliage-plants, particularly the former, which has strap-shaped, recurved, bright green leaves, conspicuously striped with creamy white. *Oreopanax Sanderianum* (Sander & Co.) is a new species similar to *Fatsia papyrifera*, with tough, leathery, yellowish green, lobed leaves; it is a native of Guatemala.

"The best (indeed, I believe, the only) new Palm is *Ptychoraphis angusta* (Kew), which grows freely in a warm house, and is as elegant as *Cocos Weddeliana*. *Pandanus Baptistii* (Veitch) and *P. Dyerianus* (Sander) are identical with *P. inermis* var. *variegatus*, introduced this year to Kew from Australia. *P. Pacificus* (Veitch) is a distinct-looking plant, with broad, graceful, shining green leaves, the margins clothed with fine teeth, and the apex narrowed abruptly to a long tail-like point. It is said to be a native of the South Sea Islands.

"*Podocarpus pectinatus* (Kew and Sander & Co.) is an elegant yew-like plant from New Caledonia, remarkable for the coating of white, waxy bloom on the leaves, which have in consequence a silvery appearance. The plant grows freely, and is easily multiplied by means of cuttings. *Synandrospadix vermitoxicus* (Kew) is a tuberous-rooted aroid from Tucuman, with large annual, heart-shaped green leaves, and a scape a foot long, bearing an open ovate spathe six inches long by four inches wide, colored gray green outside, tawny red inside. *Thunbergia grandiflora* var. *alba* differs from the type, which when well treated is one of the most ornamental of stove climbers, in having pure white instead of blue flowers. *Urceocharis Clibrani* is one of the most interesting plants of the year. It is to be distributed by Messrs. Clibran & Son, of Altringham. Cheshire, in June next. It is a hybrid between *Eucharis grandiflora* (mother) and *Urceolina pendula*, and it has all the vigor and much of the charm of the former, with flowers intermediate between the two parents. *Tillandsia Massangeana* var. *superba* (Veitch) is a near ally of *T. zebrina.* It has broad recurved leaves, colored apple-green, with transverse bands of deep chocolate. *T. Mœnsii* (Veitch) is somewhat similar to the last, but the leaves are veined and mottled with bright green on a yellowish green ground. *Tradescantia decora* (W. Bull) is an ornamental foliage-plant, with elongated lanceolate leaves colored olive-green, with a broad median line of silvery gray. Several other new kinds of tradescantia will be mentioned under the list of plants introduced by foreign horticulturists.

Stove plants.

"*Utricularia Humboldtii* and *U. longifolia* are probably the largest-flowered and most beautiful species known. They were discovered by Schomburgk on the Roraima, in British Guiana, and described by him in his charming *Reminiscences.* They were introduced into cultivation several years ago, but not flowered before last year. *U. Humboldtii* has broad reniform leaves, four inches wide and a foot high when well grown. The flowers, which are larger than those of *U. montana* and colored pale lavender, are borne on graceful scapes. *U. longifolia* has strap-shaped leaves a foot long, and short erect scapes of mauve flowers. These plants grow well in a warm, moist house, but they do not flower freely. Hippeastrums, streptocarpuses, begonias and cliveas have been improved by breeders interested in these genera. A hybrid between *Streptocarpas Galpini* and a variety of *S. Rexii*, raised and flowered at Kew, promises to be a first-rate plant.

Greenhouse plants,

"*Greenhouse plants.* Several new additions of more than ordinary promise are to be noted here. Taking the selection in alphabetical order, we have first the noble *Agave Franzosini* (Kew), which is of the size of *A. Americana*, but the leaves are silvery. There is a description of it in the *Kew*

Bulletin, 1892, p. 3, by Mr. Baker, taken from a specimen flowered in Mr. Hanbury's garden at La Mortola, Mentone. *Aloe aurantiaca* is another of Mr. Hanbury's treasures. It is intermediate between *A. ciliaris* and *A. arborescens*, a very free grower, forming a huge mass which in spring and summer is covered with crowded racemes of kniphofia-like red and yellow flowers. *Cyrtanthus Galpini* (Kew) is likely to rival *Vallota purpurea* in the size and color of its flowers. *Richardia Pentlandii*, which is the best of the yellow-flowered callas, I have noted several times recently. It is certain to become as great a favorite as the common arum lily. Several other so-called yellow-flowered kinds have been advertised, but they have not yet been proved. *Rhododendron racemosum* (Veitch and Kew) is a charming little species, dwarf as the cowberry (*Vaccinium Vitis-Idæa*), very free-flowering, and pretty in the form and color of its flowers. It may prove hardy in the warmer parts of England. *Senecio Galpini* (Kew), from the Transvaal, is a kleinia, with glaucous leaves on branched stems, less than a foot in height, bearing erect terminal heads of bright orange flowers. *Tacsonia Smythiana* is a supposed hybrid, but, as I have recently stated, it is remarkably like *T. mollisima*. *Trichodesma physaloides* (O'Brien) is an interesting and ornamental boragewort from South Africa, with a fleshy root-stock, annual stems, glaucous green leaves, and large pure white bell-shaped flowers in erect branched racemes. Unfortunately it has proved hitherto bad to establish. *Vernonia podocoma* (Kew) is a tree-like composite from south Africa, with large leathery foliage and a huge terminal panicle of rosy purple flowers. *Yucca Hanburyi* is a new species described by Mr. Baker from a plant at La Mortola. It has the habit and appearance of *Y. angustifolia*, the leaves being linear, green, rigid, with a yellow-brown edge and curling filaments; raceme simple, one and a half feet long, bearing white campanulate flowers two inches long.

Greenhouse plants.

"*Ferns.* There are no new species of ferns to record for last year. These plants do not now receive much attention from horticulturists. Hardy kinds, and particularly the rarer varieties of British ferns, are increasing in popularity, and in consequence of high cultivation they are most prolific in the production of what are called sports, a number of which have received certificates this year. Among the exotics we

New ferns.

have the variegated variety of *Adiantum mocrophyllum*, which obtained a certificate this year. *Pteris tremula* var. *variegata* is a pleasing variation of one of the most useful of ferns, and *P. Regina* and *P. cristata* are sports from the ornate *P. Victoria-Regina*, introduced by Mr. Bull several years ago. *Woodwardia radicans* var. *pendula* is not unworthy of a place among basket ferns for the conservatory.

Hardy plants.

"*Hardy plants.* There are a few promising new herbaceous plants and two or three trees and shrubs, but the list is, on the whole, meager. *Allium Kansuense* (Kew) is a pretty species allied to *A. cœruleum*, but dwarfer and with larger heads of nodding deep blue flowers. It has been introduced from China through St. Petersburg, and was one of the prettiest of the rockery plants in flower at Kew last July. *Aquilegia Transylvanica* (Kew) has large, purplish blue flowers on branching stems two feet high. *Astilbe Chinensis* (Kew) resembles *Hoteia* (Astilbe) *Japonica*, but the flower-heads are looser and the flowers rose colored. *Calochortus amœnus*, *C. flavus* and *C. Kennedyi* are three pretty additions to this genus, the last named being exceptionally brilliant in color: that is, bright scarlet, with black-purple basal spots. *Chionodoxa Luciliæ* var. *Alleni*, is a beautiful large-flowered variety, and *Chrysanthemum rotundifolium* (Kew) is a Transylvanian species, two feet high, with numerous white flowers an inch across: One of the very brightest-colored of the pinks is *Dianthus callizonus* (Kew). It is only six inches high, blooms in July, is tufted with glaucous foliage, and flowers two inches wide of the brightest rose-purple, zoned with a darker shade. It also is Transylvanian. *Emmenanthe penduliflora* (Veitch & Sons) is a Californian annual, a foot high, which in July is covered with nodding, bell-shaped, creamy yellow flowers. *Iris parabid* is a hybrid between *I. Iberica* and *I. paradoxa*, raised by Professor M. Foster, and *I. Nepalensis* var. *Letha* (Foster) is a pretty plant, with fragrant flowers.

"There are three new additions to kniphofia in *K. modesta* (Kew), an elegant plant, with grassy leaves, and spikes of white flowers two feet high; *K. Nelsoni*, a new species, with brilliant scarlet flowers on scapes two feet high, and *K. pauciflora* (Kew), also grassy-leaved, and remarkable for its loose racemes of pale yellow flowers. *Nemesia strumosa* (Sutton & Son) is a bright-colored Cape annual of extraordinary attractiveness. *Ranunculus Carpathicus*, from Hungary, is a showy perennial a foot high, with palmate leaves and golden yellow flowers two inches in diameter. *Tchihatchewia isatidea* is a badly named beautiful-flowered perennial crucifer, and bears its racemes of bright rosy pink, fragrant flowers in May. It was introduced by Max Leichtlin, from Armenia. *Thalictrum rhyncocarpum* (Kew), from the Transvaal, is an elegant plant, three feet high, with maiden-hair-like foliage. *Buddleia Colvillei* is a beautiful Himalayan shrub, which has been brought into prominent notice by Mr. Gumbleton, in whose garden at Cork it flowered profusely last year. It has loose racemes of large rose-colored, bell-shaped flowers. It is scarcely likely to be hardy, except in favored parts of England. *Cornus Kousa*, *Amygdalus* (or Prunus) *Davidiana* var. *alba*, and the white variety of *Wistaria Sinensis* received certificates last year, but they are not really new additions, although as yet little known. The varieties of *Camellia Sasanqua*, shown in December by Messrs. Veitch & Sons, and said to be quite hardy, are of sufficient interest to be included here. There is apparently a good opportunity for a nurseryman who would interest himself in the introduction of new trees and shrubs for the outdoor garden.

New hardy plants.

"*Continental plants.* The plants of interest among those introduced by continental growers, and described in foreign periodicals, are numerous. As in the case with the plants introduced this year into English gardens, orchids predominate both in number and interest. A few of them, such as *Cattleya Alexandræ* and *Epidendrum Godseffianum* (*Capartianum*). are both foreign and English introductions. The majority of the following we owe to the enterprise of the Messrs. Linden, L'Horticulture Internationale, Brussels:

Continental plants.

"*Bulbophyllum anceps*, *Lindenia*, t. 351, is an elegant little Bornean species, with stout rhizomes, large flattened pseudobulbs, bearing each a single oblong fleshy leaf and loose racemes of flowers, which are one inch across, creamy yellow, striped and spotted with maroon-purple. *Cirrhopetalum Amesianum*, *Lindenia*, t. 314, is a pretty little species, with umbels of from six to ten flowers, each an inch and a half long, and colored yellowish white and bright, rosy purple. It is a native of Java. *Epidendrum Mantinianum* (Linden), a dwarf species, with large solitary white and purple flowers.

and *E. Ortgiesii* (St. Petersburg Botanic Garden), which is in the way of *E. amabile*, with rather large flowers, colored red and white, with a purple lip, are noteworthy additions to this large, varied genus. *Eulophiella Elisabethæ*, one of the most interesting and distinct of recent plants, was introduced by the Brussels firm, who do not divulge its habitat. It is dedicated to the queen of Roumania.

Continental orchids

"*Hybrid cypripediums.* Six of these have been raised on the continent, and two deserve mention here. *C. Albertianum* was shown in flower by Monsieur Jules Hye at Ghent last November, and was awarded a gold medal. Its parents are *C. Spicerianum* and *C. insigne* var. *Wallacei*, and it is, of course, very near *C. Leeanum.* The other hybrid is La France, raised from *C. niveum* and *C. nitens. Coryanthes macrocorys* is a Peruvian species, introduced by L'Horticulture Internationale, Brussels, and figured in *Lindenia*, t. 342. It has large stanhopea-like flowers, creamy white, spotted and dotted with purple. If the several known species of this genus were less difficult to flower they would be much more in favor than they are at present. There are few orchids with flowers more remarkable in form than these.

"*Odontoglossum Pescatorei* var. *Lindeniæ, Lindenia*, t. 329, is a beautiful addition to the many fine varieties we already possess of this most useful garden orchid. It is remarkable for the large blotch of chestnut-brown on each of the flower segments, including the lip. *Peristeria Lindeni, Lindenia*, t. 328, is an attractive species in the way of *P. pendula*, with flowers globular in shape, one and a half inches in diameter, and colored pale green and purple, mottled with a darker shade of the same color. They are borne on a short raceme, which is represented as erect. *Stanhopea Moliana, Lindenia*, t. 331, is a large-flowered species, similar to *S. Wardii*, white spotted and mottled with reddish purple. It is said to be Peruvian. *Stauropsis Warocqueana, Lindenia*, t. 319, is a large, vanda-like plant, from New Guinea, not unlike the old *V. gigantea*, now called stauropsis, but with large-branched racemes of flowers an inch in diameter and colored buff-yellow, with brown spots.

"*Stove and greenhouse plants.* Most of the new plants which may be classed under this heading are chiefly remarkable for their ornamental leaves. *Alocasia Dussii* (Dammann

& Co.) has large olive-green leaves with red nerves and petioles. *Ampelovitis Romanetti* is described as a vine with lobed leaves, glaucous on the under side, and long bunches of black grape-like fruits. It is probably Chinese. *Costus Lucanusianus* is a new species from the Cameroons, and is figured in *Gartenflora*, t. 1379, where it is shown as a tall-stemmed plant, with lanceolate leaves and terminal heads of yellow and purple flowers. *Crinum Abyssinicum*, *C. Yemense* and *C. yuccæfolium* are three white-flowered species, which have been introduced from Africa and are offered by Messrs. Dammann & Co. *Cyrtosperma ferox* (Linden), from Borneo, is not unlike *C. Johnstonei*, which used to be called an alocasia, and is remarkable for its spiny leaf-stalks and sagittate blades. *Dichorisandra angustifolia* (Linden), from Ecuador, has prettily variegated foliage, and is not unlike *D. vittata*, but the leaves are more distinctly lined with white and are purple beneath. *D. musaica* var. *gigantea* (Linden) has stems two feet high and leaves nine inches long by five inches broad. *Dieffenbachia meleagris*, *D. olbia* and *D. picturata* are three new Lindenian introductions which may be recommended to growers of ornamental-leaves aroids, the best of them being the first named, which has the leaf-stalks very prettily marked with transverse zigzag lines. *Heliconia spectabilis* (Linden) is probably the same as *H. metallica*, a handsome foliage-plant for the stove, with long lanceolate leaves, dark green above, purplish beneath.

Stove and greenhouse plants.

"*Impatiens Micholitzii* is a new introduction from New Guinea and described as a dwarf branching plant with white and rose flowers. *Labisia smaragdina* (Linden) is a Bornean plant, with a short stem and numerous lance-shaped, obtuse leaves of a pleasing deep green color and panicles of small pink flowers. It is very like an ardisia. *Musa Martini* is described by Monsieur André as a handsome species, which may be grown in as low a temperature as *M. Ensete.* It has reddish leaf-stalks and veins and rose-colored flowers. It was introduced into France from Teneriffe. There is a figure of it in the *Revue de l' Horticulture Belge, 1892. p. 107. Peperomia metallica* (Linden) is a pretty addition to the variegated plants of this genus, its lanceolate leaves being dark green, striped with gray above and tinged with red beneath. It is Peruvian. *Senecio sagittifolius* is one of the most interesting species in the enormous genus senecio, and, moreover, it is one that is likely to take a prominent place among garden plants. It was discovered in Ecuador by Monsieur Ed. André, and introduced by him into France. He also figured and described it in the *Revue Horticole 1892*, t. 16, 17. Young plants of it are now offered by Monsieur Bruant, of Poitiers, who publishes a figure of it in his plant catalogue for this year. It has huge green radical leaves, three feet or more long and about a foot wide, sagittate, with toothed margins and a curiously crested midrib. These leaves are arranged in a rosette, from the center of which is developed a stem eight to ten feet high, clothed with erect lanceolate leaves, and bearing at the top an enormous corymb of marguerite-like flowers, which are white, with a yellow disk, and measure an inch and a half across. A specimen grown in the open air in Touraine last summer developed leaves a yard long. It was removed into a temperate house for the winter, where it produced a stem eight feet high, which bore a corymb of 140 flowers. A young plant of it has grown rapidly in a warm greenhouse at Kew. It appears to push up suckers freely. *Tradescantia Reginæ* and *T. superba* are two Lindenian introductions from Peru. They have prettily marked foliage, the former gray green and purple, with traverse lines of dark green, the latter dark green, with whitish stripes along the midrib. *Smilax argyræa*, from Bolivia (Linden), is a pretty little stove-climber, with prickly stems and small lanceolate leaves, green, attractively spotted with white. It is an improvement on *S. maculata*.

Greenhouse plants.

"*Hardy herbaceous plants. Gypsophila Raddiana.* This is a new species, which has been introduced from Persia into the Botanic Gardens of St. Petersburg, where it flowered last year, and was figured in the *Gartenflora*, t. 1365 It is dwarf and tufted in habit, and has pink flowers. The gypsophilas are most useful plants for the rockery or border and as a source of cut flowers. *Iris Madonna* (Dammann & Co.) is described as a half-hardy evergreen species from Arabia, with large lilac-blue flowers. *Ixioloirion macranthum* and *I. Sintenisi* are two of Herr Max Leichtlin's introductions, and are said to have large blue-purple flowers. *Podachænium Andinum* is a large-leaved composite from the Andes of Colombia, and is recommended by Monsieur André for sub-tropical bedding.

Hardy plants.

It bears lax corymbs of white and yellow daisy-like flowers. Possibly it is not hardy. *Primula calycantha*, from Yun-nan. is described by Herr Max Leichtlin as having smooth gray green leaves and numerous reddish blue flowers in umbels.

New trees and shrubs.

"*Hardy trees and shrubs.* *Acer palmatum* var *Alkii* is figured in the *Gartenflora*, t. 1363, and described as a handsomely variegated variety. *A. Trautvetteri*, var. *erythocarpa*, from the Caucasus, is remarkable for its red fruits. It is cultivated in the arboretum at Zoschen. *Cytisus Schipkænsis* is another Zoschen plant, introduced from the Balkan mountains. It is a compact shrub, only about a foot high, with numerous white flowers. *Fraxinus raibocarpa* is a species from central Asia, which has been known in botanic gardens several years, but hitherto has not been happy in cultivation. It is a tall tree of graceful habit, with few and rather small leaflets, and is remarkable for its sickle-shaped samaræ. It was introduced to St. Petersburg, and describel by Dr. Regel. *Prunus præcox* is an early-flowering seedling from *P. Japonica* (*Sinensis*), var. *sphærica*, and is described and figured by Carrière in the *Revue Horticole*, 1892, p. 488, figs. 142-3. *Prunus Salzeri* is nearly related to *P. Padus*, and has pale yellow fruits. It is said to come true from seed, and is a native of Carinthia and Syria. It is cultivated at Zoschen. *Quercus Macedonica* is described as 'a magnificent oak of the Cerris group, bearing large edible acorns'. It is in the Kew collection. *Q. Schochiana* is said to be a hybrid between *Q. Phellos* and *Q. palustris*. It is grown at Zoschen. *Robinia Neo-Mexicana* var. *luxurians* is described by Dr. Dieck as a beautiful tree taller than the type and with branched racemes, which were produced at Zoschen twice in the year, namely, in June, and again in August, on the youngest branches."

NOTE.—For a complete list of the new plants receiving certificates in England during 18'2, see *The Garden Annual* for 1893 by W. Robinson, pp. 313-322.

§ 3. *Plant Diseases and Insects.*

Much of the loss of the fruit crops, especially of apples (see page 7), is thought to have been due to incursions of fungi, which developed rapidly in the wet weather of spring. Later on the season was dry, and fungi did not develop to an alarming extent, although more or less serious trouble was experienced throughout the season in potatoes, grapes and some other crops. The potato blight—of which there are two or more kinds[*]—was prevalent over a large part of the country (see page 35). A new potato pest is reported from Kern county, California. It is the larva of the moth known as the potato-tuber moth (*Lita solanella*), an insect which has been very destructive in New Zealand, Australia and Algeria. The larva bores into the tubers while they are yet in the ground. The first discovery of this pest in America appears to have been at Los Angeles in 1888, although the fact was not recorded at the time.[†] Perhaps the most striking very recent development in the warfare against insects and fungi is the organization of corporations for the purpose of destroying pests. Upon the Pacific coast the fruit-pest exterminating companies seem to be entering upon an era of usefulness. Considerable attention has been devoted to the extermination of gophers in the western country[‡]. In California it has been proposed to introduce the mongoose to destroy gophers.

Pests of the year.

The root-knot of the peach is coming to be a serious evil in the the southern states and in California, and in the latter state the County Horticultural Commissioners are making a strong effort to dislodge the trouble. This root-knot is a serious injury, caused by a minute nematode worm,[§] which is common to many plants. In the northern states where frost enters the ground to the depth of the roots, this root-knot is unknown, but it attacks various plants in greenhouses.

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[*] Annals for 1891, 118.

[†] See *Insect Life*, iv. 239, 396.

[‡] For a general account of attempts with the pocket gopher, see *Science*, xix. 204 April 8, 1892.

[§] Annals for 1891, 109.

The only legislation of the year aimed directly at insect or plant diseases is the following New York law for the suppression of black knot:

"SECTION 1. It shall be unlawful for any person knowingly or willfully to keep any plum, cherry or other trees infected with the contagious disease or fungus known as the black knot; that every tree so infected is hereby declared to be a public nuisance, and no damages shall be awarded in any court in this state for entering upon premises and cutting away or severing the diseased part or parts of any tree so infected, and destroying the same, or cutting down or removing such infected tree altogether and destroying the same, if done in accordance with the provisions of this act.

Black knot law.

"§ 2. In any town or city in this state in which such contagious disease exists, or where there is good reason to believe it exists or danger may be justly apprehended of its introduction, it shall be the duty of the supervisor or mayor of any town or city, upon the application made in writing and signed by at least three freeholders, who are residents of said town or city, to appoint forthwith three competent freeholders, who shall be fruit-growers, of said town or city as commissioners, who shall hold office during the pleasure of said supervisor or mayor, and such order of appointment and of revocation shall be entered at large on the town or city records.

"§ 3. It shall be the duty of said commissioners, within ten days after appointment as aforesaid, to file their acceptances of the same with the clerk of said town or city, and said clerk shall be ex-officio clerk of said board of commissioners, and he shall keep a correct record of the proceedings of said board in a book to be provided for the purpose, and shall file and preserve all papers pertaining to the duties and actions of said commissioners, or either of them, which shall be a part of the records of said town or city.

"§ 4. It shall be the duty of the commissioners, or any of them, upon or without complaint, whenever it comes to their notice that the disease known as the black knot exists, or is supposed to exist, within the limits of their town or city, to proceed without delay to examine the trees supposed to be infected, and if the disease is found to exist a distinguishing mark or marks shall be placed upon that part or those parts of every tree so infected, which in the judgment of the commissioner or commissioners should be removed and destroyed, or if in the judgment of such commissioner or commissioners any tree so infected should be entirely removed and destroyed, then the trunks of such trees shall be thoroughly girdled, and a written notice given to the owner, personally or by leaving the same at his usual place of residence, or if the owner be a non-resident by leaving such notice with the person in charge of such trees. The notice shall contain a simple statement of the facts as found to exist, with an order to effectually remove and destroy by fire the part or parts of every tree so marked and designated, or every such tree entire which shall be so girdled, as the case may be, within ten days from the date of the notice above required. Such notice and order to be signed by the three commissioners, or any two of them.

Black knot law.

"§ 5. Whenever any person shall refuse or neglect to comply with the order mentioned in the last section, it shall become the duty of the commissioners to carry out the directions of said order, and forthwith to remove and destroy by fire every tree or part of a tree so girdled or marked, as aforesaid, employing all necessary aid for that purpose; the expenses for such removal and destruction to be a charge against the town or city; and for the purpose of such removal and destruction, the said commissioners, their agents and employes, shall have the right and authority to enter upon any and all premises within their town or city.

"§ 6. If any owner, or if such owner be a non-resident, then if any person in charge of such trees neglects to remove and destroy by fire every tree, or part of a tree, so found to be infected, and marked or girdled, as aforesaid, after notification, and within the time hereinbefore prescribed, such person shall be guilty of a misdemeanor and punished by a fine not exceeding twenty-five dollars or by imprisonment in the county jail not exceeding ten days, or both, in the discretion of the court; and any justice of the peace of the town or city in which said offense shall be committed shall have jurisdiction thereof; and all such fines so collected shall be turned over to the supervisor of said town, or other proper officer, to be placed by him in the contingent fund of said town or city.

"§ 7. The commissioners shall be allowed for services under this act two dollars each for each full day, and one dollar each for each half day, and their other reasonable charges and disbursements hereunder, to be audited, as well as any other charges and disbursements under this act, by the board of town auditors or proper city officers, to be paid to such commissioners as other town or city accounts are paid. Such fees and all reasonable charges and disbursements of said commissioners, in each case, may be recovered by the town in the name of the supervisor, and in cities in the name of the city, from the owner of the diseased trees, on account of which such fees, charges and disbursements became payable or were incurred.

"§ 8. This act shall take effect immediately."

Approved by the Governor, May 12, 1892.

Spraying for the purpose of combatting the various enemies of cultivated plants is now an assured practice over a large part of the country. The chief discussions at present are those relating to the best methods of performing the operation. The first legislation which aims to control the spraying of plants is the following law, passed by the Legislative Assembly of Ontario, and assented to April 8, 1892:

Law to protect bees.

"*An Act for the Further Protection of Bees.* 1. No person in spraying or sprinkling fruit trees, during the period within which such trees are in full bloom, shall use or cause to be used any mixture containing Paris green or any other poisonous substance injurious to bees.

"2. Any person contravening the provisions of this act shall, on summary conviction thereof before a justice of the peace, be subject to a penalty of not less than $1.00 nor more than $5.00, with or without costs of prosecution, and in case of a fine or a fine and costs being awarded, and of the same not being upon conviction forthwith paid, the justice may commit the offender to the common gaol, there to be imprisoned for any term not exceeding 30 days, unless the fine and costs are sooner paid.

"3. This act shall not come into force until the first day of January, 1893."

The experiment of the year in the control of plant-diseases and insects is shown in the indexes of experiment station literature, in Part II. The most important conclusions of the year. however, in reference to spraying, are discussed for this volume by E. G. Lodeman, of Cornell University:

The more progressive fruit-growers in all parts of the country have this year seriously considered the problem of protecting their crops by means of sprays. The subject has received more attention than ever before, and growers who were at first skeptical are now firm believers in the practice. The character of the discussions upon the subject is undergoing a marked change. The question, "Does it pay to spray?" is not asked so frequently as formerly, but it has given place to those which call for more information regarding the best materials to apply, and the best time and manner of applying them. Spraying. Intelligent fruit-growers have passed the period of doubt, and are now eagerly seeking information. The experiment stations, especially in the northern states, have been alive to the wants of the growers. The study of the life histories of injurious insects and fungi has been steadily carried on, and in some cases results of the highest importance have been obtained.

Among the insecticides and fungicides which are now available may be found remedies or preventives for almost all the pests which injure crops. Many experiments have been made with new materials, with the hope that some of the disadvantages of substances already in use might be avoided. However, few additions of any value have been made to the list. Experimenters have turned their attention more particularly to the best methods of spraying than to the discovery of new materials, as has heretofore been so extensively done. As a rule, the diseases treated have been the same as those which, on account of their serious nature, had already received attention. At the New York State Experiment Station the leaf-spot of chrysanthemums and some bean diseases have also received attention.

The Bordeaux mixture is still the leading fungicide, scarcely a case being cited in which other materials have given better or even as good results. Fungicides. During the year 1891 the Department of Agriculture* at Washington carried on experiments to determine the comparative value of a number of fungicides.

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*Bull. No. 3, Division Veg. Path. U. S. Dept. Agric. Published in 1892.

The following are the new fungicides used:

Copper Saccharate.

Copper sulphate	2½ oz.
Sodium carbonate	3 "
Cheap molasses	3 "
Water	6½ gals.

Glue Mixture.

New fungi-cides.

This was prepared in the same way as the preceding, except that 2 ounces of glue were used in place of the 3 ounces of molasses.

Copper Acetate.

Copper acetate	½ oz.
Water	5 gals.

The copper acetate was simply wet up as thin paste in the water 24 hours previous to dilution.

Calcium Chloride Mixture.

Copper sulphate	½ oz.
Calcium chloride	¼ oz.
Water	5 gals.

The copper sulphate was dissolved in a quart of water, and the calcium chloride was treated in the same way. The two solutions were then poured together and enough water added to make five gallons.

The fungicides were applied to a vineyard, and the following are some of the results obtained:*

"With the exception of the Bordeaux mixture, all the fungicides used more or less injured both leaves and fruit.

Experi-ments with new fungi-cides.

"The preparations, however, are all worthy of further trial, as it may be possible by a modification of the formulæ to largely overcome the difficulties set forth.

"In the prevention of black rot, all the preparations gave good results, the average for the copper preparations being higher than that of the solutions containing none of this metal.

"Taking cost, ease of preparation and application, effect on foliage and fruit, and all other questions into consideration, the Bordeaux mixture, even though reduced to less than one-sixth the usual strength†, proved the most reliable remedy against rot."

Another experiment, somewhat similar to the preceding, was made upon quince trees for the leaf spot. In this case, the new fungicides used were the acetate of copper of varying strength, chloride of lime of varying strength, and the glue mixture. The following conclusions were reached:

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* Bull, No. 3, p. 31.

† Copper sulphate 6 pounds, lime (unslaked) 4 pounds, water 22 gallons. Regular formula.

"Five treatments gave a larger percentage of fair fruit than three when Bordeaux and copper acetate were used, but there was no advantage in the case of the other fungicides.

"The three most effective fungicides used were Bordeaux mixture, copper acetate, and the glue, or Perret, mixture. Of the three, the Bordeaux mixture is to be preferred when all things are taken into consideration.

"The amount of spot was actually greater upon trees treated with the chloride of lime and potassium sulphide than upon the untreated. This excess of spot increased regularly with the concentration of the solution of the chloride of lime."

Fairchild has suggested the use of cupric borate and cupric polysulphide as fungicides. These two substances have been tested by Beach,* with negative results.

The formulas used are:

New fungicides.

Cupric Borate.

Copper sulphate	2 lbs.
Powdered borax	2 1-10 lbs.
Water	30 gals.
Soap, sufficient to make a suds.	

Cupric Polysulphide.

Copper sulphate	2 lbs.
Potassium sulphide	2 lbs.
Water	30 gals.
Soap, sufficient to make a suds.	

These mixtures were applied to the bean, but both injured the foliage to such an extent that their further use upon this plant is not advised.

A modified form of the Bordeaux mixture was also used in the same experiment. In its preparation there were used:

Copper sulphate	2 lbs.
Lime (unslaked)	1⅓ lbs.
Water	30 gals.
Soap, sufficient to make a suds.	

This weak form of the Bordeaux gave the best results of any fungicide tested for bean anthracnose.†

Beach‡ has also used mercuric chloride as a fungicide, according to the formula:

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*Bull. 48, New Series N. Y. Agr. Exp. Sta. 326.

†Ibid, 314.

‡Ibid. Bull. 49, 7.

"Dissolve two ounces of the chloride in two gallons of hot water; let it stand several hours, or over night, then dilute to 15 gallons." This was used against the potato scab, and gave promising results.

New fungicides.

Green* recommends the following formula, but apparently no practical test has yet been made of it:

Copper-Arsenic Solution.

Copper carbonate	6 oz.
Paris green	4 oz.
Ammonia	2 qts.
Lime water	50 gals.

"The copper carbonate and Paris green may be mixed and dissolved in the ammonia (more or less ammonia will be required, according to strength), after which add the lime water. By lime water is here meant clear lime water, made by dissolving as much lime in water as it will take up."

Paris green and London purple.

In Bulletin 48 of the Cornell University Experiment Station it is shown that Paris green has a decided value as a fungicide.† "When used alone it reduced the injury from scab upon the King apples 17.7 per cent., upon the Baldwins 7 per cent." When used in combination with the Bordeaux mixture better results were obtained than when London purple was so used. The fungicidal value of Paris green is, however, not nearly so marked as that of the Bordeaux mixture.

The relative merits of Paris green and London purple as insecticides are also discussed in the same bulletin. They were compared only when used in combination with the Bordeaux mixture. The season's work shows Paris green to be the more effective.

Goff‡ has also carried on some experiments to test the value of Paris green as a fungicide. His conclusion is that "Paris green was more efficient in preventing scab, and more effective against insects, than any of the other preparations, used singly or combined." Some of the combinations with which comparison was made are: Bordeaux mixture and London purple, ammoniacal copper-carbonate and London purple, suspended copper-carbonate and London purple.

The best combination of insecticide and fungicide is still the Bordeaux mixture and some form of arsenic. This combination has been thoroughly tested at two stations[*] the past year, the conclusions reached in each case being that the action of neither insecticide nor fungicide is weakened when the two are applied together.

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*Bull. 48, Ohio Agr. Exp. Sta. 5.

†Page 272.

‡Bull. 3, Division Veg. Path. U. S. Dept. Agric. 36.

Bordeaux mixture.

The active principle of the Bordeaux mixture has not yet been definitely determined. Bulletin 48 of the Cornell station contains an abstract of an article written by Livio Sostegni[†] upon the chemical composition of Bordeaux, and the best method of preparing the mixture.

It is stated that probably the most valuable portion of the Bordeaux is the basic sulphate of copper, as this substance is more readily dissolved by the carbonic acid gas of the atmosphere. Quick-lime does not appear to be an essential in the preparation of the mixture. If sufficient air-slaked lime is used, this will answer the same purpose, provided that more time is allowed for the reaction to take place, 24 hours being desirable. It was found that practically one-third more lime is required when it is air-slaked than when it is fresh.

Circulars addressed to the leading apple growers in all parts of the country, to determine the prevalence of the apple-scab fungus, were sent out by the Cornell station.[‡] The replies received show that this disease is present in all districts where apples are grown to any extent, and it is probable that none of the varieties generally grown are free from it, although some varieties are more susceptible to injury than others.

Early sprays.

The work which relates to the best methods of treating plant diseases strongly emphasizes the fact that applications should be made earlier than heretofore recommended. The work done in the laboratory and in the field shows that for a large number of diseases one application should be made before the buds start. This applies particularly to the apple scab fungus;[§] fungous diseases of the grape;[||] anthracnose of blackcap raspberries;[*] and perhaps also to the black knot of the plum.[†] Undoubtedly other diseases could be more easily controlled if the work could be begun at the right moment. This applies also to insect pests. Slingerland[‡] has found that the eggs of some insects are practically unaffected by any of the insecticide now in common use. In combatting the pear tree psylla it was found entirely useless to commence operations until the eggs hatched in the spring. If the pear trees are thoroughly sprayed with the kerosene emulsion as soon as the young insects appear, the latter may be easily destroyed. (See p. 115).

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[*] Bull. 17, Mass. Hatch Exp. Sta. Bull. 48, Cornell Exp. Sta.

[†] Le Stazioni Sperimentali Agrarie Italiane, August, 1890.

[‡] Bull. 48, Cornell Exp. Sta.

[§] Bull, 48, Cornell Exp. Sta. Bull. 3, Division Veg. Path. U. S. Dept. Agric. Bull. 48, Ohio Exp. Sta.

[||] Bull. 3, Division Veg. Path. U. S. Dept. Agric.

Machines.

Spraying machinery and appliances have received no noteworthy addition during the year. Various minor improvements have been made to the various pumps and nozzles already upon the market, and at present outfits adapted to almost every kind of work may be obtained. The tendency in all machinery and nozzles is towards simplicity. The power pumps, or those which are propelled from the wagon or vehicle wheels, have not found general favor. A strong hand pump throwing a continuous stream, with brass fixings, is mounted upon any light wagon, and one man can drive and pump, while another manages the hose. Several new nozzles were perfected near the close of the year, but they have not been thoroughly tested.

Insects. The warfare against insects has been characterized by great eagerness and effectiveness during the past two or three years, in consequence of the good results which have followed the use of arsenical and other sprays. The agitations following institutes, college instruction and the teachings of the press have awakened farmers to the necessity of greater thoroughness and care in all operations, and this care is nowhere more signally rewarded than in the wholesale attack upon insects by means of the sprays. It is to be feared that the signal conquests of the sprays may eclipse the slower methods which are still necessary in the warfare against borers and special kinds of insects, and it may cause people to become careless as to the cleanness of hedge-rows and waste places; but on the whole, the spraying machine marks a great epoch.

Insects in 1892.

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[*] Bull. 17, Mass. Hatch Exp. Sta.
[†] Ibid.
[‡] Bull. 44, Cornell Exp. Sta. 179.

The following report upon the entomological studies and results for 1892 is made to the Western New York Horticultural Society, by the State Entomologist of New York, Dr. J. A. Lintner:

Insect injuries.

The year has been one of remarkable exemption from insect injuries, as the result, beyond question, of meteorological conditions quite unfavorable to the multiplication of our more common insect pests. This has been particularly noticeable in the very few complaints that have been received of injuries to fruits—certainly not one-fifth of the average of preceding years. This, in part, may be ascribed to the better knowledge of methods of dealing with the enemies of fruits, to which our fruit-growers are becoming educated, and to the rapidly growing use of insecticides and spraying instruments. Certain it is, that several of our more noxious insects, which almost annually are the cause of serious injury, did not present themselves in sufficient number to call for active operations against them. Thus, apple trees, for the most part, escaped their usual early spring visitation from the aphis, *Aphis mali.* The cherry tree aphis, *Myzus cerasi*, was not prevalent. The orchard tent-caterpillar, *Clisiocampa Americana*, was far less abundant than in preceding years. Not a single communication came to me relating to the operations of the eye-spotted bud-moth, *Tmetocera ocellana*, which had been exceedingly destructive in 1891, and a general cause of complaint from orchardists in Western New York. The pear tree psylla, *Psylla pyricola*, which threatened to extend its destruction of pear trees in the Hudson River Valley to other portions of the state, has not, during the past season, inflicted any appreciable harm.

No very serious attacks have been reported to me upon garden or field crops. No complaint has reached me of injury to grain by the grain aphis, *Siphonophora avenæ*, although again appearing in Columbia county, New York, nor did the hop-vine aphis, *Phorodon humuli*, very materially affect the yield of hop-yards. The year has further been an exceptional one, in that no new insect pest of marked economic importance has come under my notice, calling for special investigation.

VARIOUS PESTS OF THE YEAR.—Among the insect demonstrations of the year, the following may deserve a few words of notice at the present time:

The fall tent-worm, *Hyphantria cunea*, has been noticeably abundant in some parts of the state, and northward into Canada.

Maple-worm.

The green-striped maple-worm of *Dryocampa rubicunda* seldom appears in harmful numbers in New York or in the Eastern States, but in Monticello, N. Y., on the grounds of John D. Lyons, a number of soft-maple trees, which had been set out by him a few years ago, were completely defoliated by caterpillars during the past season. In several of the Western States, notably in Kansas, Missouri and Nebraska, the soft-maples planted as shade trees in cities are annually almost stripped of their foliage (see Bulletin No. 14, Vol. iii. 1890, of the Agricultural Experiment Station of Nebraska).

Cabbage caterpillar.

The cabbage caterpillar of *Plusia brassicæ*, which in the southern states is one of the principal pests with which cabbage-growers have to contend, but which has never become common in the state of New York (see Second Report on the Insects of New York), has been complained of as giving much trouble in a greenhouse in Garden City, Long Island. Rev. Dr. Cox has written of it that "the caterpillar specially affects young parsley, but will also make a continuous meal upon heliotrope, pelargonium, and in fact on almost any green thing."

Canker-worm.

The canker-worm, *Anisopteryx vernata*, was so abundant in some orchards in Monroe county as to have nearly destroyed the foliage. Some orchards in Cooperstown, Otsego county, were so despoiled by the caterpillars as to present the appearance of having been scorched and shrivelled by fire.

Codlin-moth.

The apple-worm of the codlin-moth, *Carpocapsa pomonella*, was less injurious than usual. An extensive fruit-grower and nurseryman from near Rochester wrote of it: "Codlin-moths in our orchards were almost extinct, it being rather difficult to find an apple showing codlin-moth injury. I cannot account for this," he wrote, "as ordinarily they are very abundant."

White grub.

Severe injuries to potatoes from the white grub, *Lachnosterna fusca*, were reported from Chautauqua county. Another species of *Lachnosterna*, viz., *L. tristis*, was sent to me from Cambridge, N. Y., by J. L. Smart, with the statement that it had appeared in large companies, in the month of May, in localities in the neighborhood, and had devoured the foliage of trees, showing a preference for that of the sugar-maple.

Elm or gooseberry insects.

The elm-leaf beetle, *Galeruca xanthomalæna*, in its northward progress, has not yet been seen in Albany. It was reported as having been abundant in Dutchess county in June.

Injuries to gooseberries on the Experimental Farm at Geneva, from the operations of one of the larger flea-beetles, was observed during the month of August. Examples received from Dr. Collier showed them to be *Systena frontalis*—a species that had not previously been known to attack the foliage of the gooseberry. It will be noticed in my Annual Report for 1892.

Potato beetle.

The Colorado potato beetle, *Doryphora decemlineata*, continues with us—less abundantly in some years than in others, but always in sufficient numbers to call for protection from its destructiveness by the use of Paris green or London purple. Sprinkling or spraying the vines with an arsenite is now quite generally practiced throughout the state, and should not be intermitted even in years of its comparative scarcity, for in such seasons efforts to reduce its numbers are the more effective. During the year, it has been reported as causing much damage in Albany and Chautauqua counties, although, perhaps, not greater than in other counties, where no mention of its injuries were made. In its northward progress, this insect has reached Prince Edward Island, in the Gulf of St. Lawrence, N. Lat., 46½°, and has inflicted serious damage the present year.

The plum curculio, *Conotrachelus nenuphar*, was quite harmful to plums in Orange county in June.

Strawberry insect.

A small beetle, one of the *Curculionidæ* known as *Otiorhynchus ovatus*, which has been shown by Professor C. M. Weed as injurious to the crown of strawberry plants, and has, judging from its abundance, several other food-plants as yet unknown, appears to be increasing in numbers within our state, from the frequency with which it is reported as entering dwelling-houses. Instances of such occurrences, to an annoying degree, have been given in some of my reports. In August last, examples of it were sent to me for identification from Moriches, Suffolk county, N. Y., where it was abounding in the residence of the gentleman from whom it was received. In *Insect Life* for September, 1892, Dr. Riley records it from beneath carpets in many houses in Michigan, and gives interesting notes on its habits.

The asparagus beetle, *Crioceris asparagi*, has made its appearance in Rochester. At the meeting of the Association of Economic Entomologists, held in this city in August last, examples of a beetle were brought in by a young collector, which proved to be this pernicious insect. Although it had been observed at Geneva, N. Y., three or four years ago, I had not heard of its having been reported from Monroe county. Later in the month, George T. Conover, a horticulturist at Geneva, wrote me that the insect was very destructive to the asparagus beds of John Charlton, florist and nurseryman, of Rochester. Mr. Charlton had used every means known to him, and had sprayed with different insecticides, including Paris green, but had not succeeded in relieving himself of the pest, which was still abundant with him. In its northern progress, this beetle has reached Nashua, in New Hampshire.

Asparagus beetle.

Passing from these general notes, may I ask your attention to a more detailed notice of three insect enemies of fruit, forest and shade trees, which are at present subjects of special study, in the hope of discovery of means by which their serious ravages may be arrested.

The Gypsy-Moth.—Notwithstanding the many insect pests of the first rank that are preying upon and devouring the products of the orchards, vineyards, nurseries, gardens, fields and forests of the state of New York, it is a cause for thankfulness that another insect pest which the people of an adjoining state have been for the past two years, under liberal state aid, endeavoring to exterminate, has not yet entered within our borders. I refer to the gypsy-moth, *Ocneria dispar*, which was accidentally introduced into Massachusetts about the year 1869 by a gentleman interested in the rearing of silkworms.

Gypsy-moth.

When first brought to notice, in 1889, by Professor Fernald of the Massachusetts State Agricultural College, as a dangerous public enemy, it was believed to be confined to a single locality in the town of Medford, less than a square mile in area. It had at that time, according to Professor Fernald, "multiplied to such an extent as to cause the entire destruction of the fruit crop, and also to defoliate the shade trees in the infested region." The imperative necessity of its arrest, and the probability that it might be exterminated if proper means were promptly brought to bear upon it, urged by Professor Fernald, led to an appropriation by the Legislature, in March, 1890, of $25,000, for the accomplishment of the desired end, and the appointment by the Governor of three commissioners to conduct the work. An additional appropriation of an equal amount was made later in the year.

The commissioners, in entering upon their labors, found that the moth, instead of being confined to the narrow limits above named, had already invaded various parts of a territory four miles long by sixteen broad. Active measures were carried on by the commissioners during the season of 1890, yet, at its close, they reported the insect in seven towns, over an area of 50 square miles. Many acres of brush had been burned over, and 70,000 trees had been sprayed with Paris green and water, in which about two tons of the Paris green was used.*

Gypsy-moth.

The following year, in lieu of the commissioners, the work was placed in the hands of the State Board of Agriculture, and by them entrusted to a Gypsy-Moth committee of three carefully selected persons. The magnitude of the work becoming apparent, another appropriation was made by the Legislature, in June, 1891, of $50,000, making the aggregate of appropriations thus far $100,000.

It appears, from a special report on the subject recently made by the State Board of Agriculture, that its committee has conducted its work during the past year, *i. e.*, in 1891, with energy, with judgment, and with all the success that could have been expected. Some of the measures used by it for the control of the insect were the following: Spraying trees with Paris green in water; spraying the caterpillars with insecticides that kill by contact; spraying infested stone walls with kerosene and firing it; gathering the egg-clusters and burning them; banding the trees with tarred paper to prevent the ascent of the caterpillars, and with burlaps for a hiding place where they could easily be destroyed; burning brush and infested shrubbery after kerosening it; burning out nests in holes of trees and cementing them; inspecting for caterpillars all vehicles going out of the infested territory.

The extent of the work done will more fully appear from the following statement, published by the committee, covering operations from April 1, 1891, to December 31, 1891:

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*Up to the present time, three and a half tons of Paris green has been used.

Trees:	Number inspected	3,591,982
	Number infested	213,828
	Number cleared of eggs	212,432
	Number sprayed	177,415
	Number cemented	19,296
	Number burlapped	68,720
	Number banded	12,000
Buildings:	Number inspected	87,536
	Number infested	3,647
	Number cleared of eggs	3,574

What is regarded as a conservative estimate, based on the daily reports made to the committee, shows the aggregate number of egg-clusters destroyed during the first six weeks of the season to be 757,760. Their bulk, according to Director Forbush, was nearly eight cart-loads. The average number of eggs in a cluster being 468, there were over 353,000,000 of eggs destroyed during that time. The largest number of men employed at any one time was 242.

Gypsy-moth.

At the close of the year 1891, covered by the report referred to, the insect was known in 26 towns in Massachusetts, over an area of 200 square miles. No instance of its occurrence outside of the state of Massachusetts had been authenticated.

Through the kindness of Professor E. H. Forbush, director of the field work of the Gypsy-Moth Committee, in sending me for use on this occasion a type-written copy of his address before the Massachusetts State Board of Agriculture, in December last, I am able to make extracts therefrom relating to the operations of last year (1892):

The appropriation made by the Legislature to the State Board of Agriculture for the prosecution of the work in 1892 was $75,000. Operations were conducted much in the same manner as in the preceding year, but after thoroughly testing the principal means of control utilized in this country and in Europe for this and similar insects, they proved to be inadequate, and new measures were experimented with and employed when their value became established.

Thus it was found that arsenical spraying, upon which much dependence had been placed, failed to kill the larger and more vigorous larvæ. Insecticides that kill by contact were therefore resorted to; the eggs were killed by an oil not previously used to any extent for insect destruction; and four tons of "insect lime," known as "raupenleim" in Germany, was imported from Europe and applied in a band on the bark around the tree. Its viscidity, lasting for two months, served an admirable purpose in catching and holding all insects and effectually preventing their ascent of the tree.

The banding with burlaps was not only successful in entrapping large numbers of the ocneria caterpillars, but also hosts of other injurious species, which could then be conveniently destroyed.

Gratifying success is reported from spraying infested brush and shrubbery on waste lands with kerosene from a cyclone nozzle, and then igniting it. The same method, it was thought, might be effective against the marches and invasions of the army-worm.

It is claimed by the committee that it has succeeded the past year in staying the spread of the insect, and in greatly reducing its numbers. Fifty towns were thoroughly searched, and the moth found in thirty. In some of the towns it has been locally exterminated, and in three entirely destroyed. Not one egg-cluster can now be found, as against a hundred in 1891. If sufficient means are provided for the work, extermination of the insect within a few years is regarded as next to certain. With an annual appropriation of $50,000, it is confidently believed by the committee that further spread can be prevented and the insect steadily reduced in numbers.

Gypsy-moth.

From my present knowledge of the work of the committee, I must commend it heartily, and would further express the desire that such appropriations shall continue to be made by the state as will enable the committee so to reduce the numbers of the insect that it may soon be handed over to its parasites, predaceous insects, and birds for complete extermination.

If I seem to you to have dwelt too long upon a single insect pest, please bear in mind the deep interest which we in New York must feel in the efforts being made for the extermination of this omnivorous insect before it shall have entered within our borders. In this interest, each one of the other states should also share. And then, again, if success shall, as we hope, attend this effort, it cannot fail of furnishing a precedent for calling for state aid, and possibly upon the national government, from time to time, for prevention of the spread of some other newly-introduced noxious pest, by stamping it out at its place of introduction—quite as much within their province as is protection from an invading army of soldiery, or from the fearful pestilence. How insignificant were the losses inflicted by the Hessian soldiers compared to those which have resulted from the bringing hither of the Hessian-fly!

A Destructive Shade-Tree Pest.—A destructive borer of some of our most highly-prized shade-trees, as the elm and maple, has within the last five years been brought to notice in northern New Jersey, and in New York city and its immediate vicinity. It is the larva of a rather large bombycid moth, bearing the name of *Zeuzera pyrina*, closely allied in its habits and character to our long-known borer of the locust, oak and willow—*Cossus robiniæ*. In Europe it has long been known as *Zeuzera æsculi*—the specific name referring to the horse-chestnut, on which it was probably first observed, although, according to Kollar, "choosing that tree for its abode less frequently, in the neighborhood of Vienna, than any of the other trees that serve it for food, living chiefly on elm, walnut, pear and apple trees."

Shade-tree pest.

The first example of it, so far as known, taken in this country (it is another of our introduced European pests), was found in a spider's web at Hoboken, N. J., in June, 1881 (*Papilio*, ii. 1882, p. 34). Several examples of it were captured by collectors at electric lights in the summer of 1887, at Newark, N. J. The following year nearly 50 specimens were taken at Newark, also at electric lights. In 1889, it was found at Arlington and at Orange, in New Jersey, and also, according to Mr. Pike (*Insect Life*, iv. page 318), in Brooklyn, N. Y., where it had attacked "nearly all the trees, mostly maples, from Carlton avenue to the entrance of Prospect Park." In June, 1890, it was reported as girdling and boring young maple trees within a few inches of the ground at Riverside Park, New York, causing them to break and blow over with the wind; it had also attacked the elms and maples in Prospect Park, Brooklyn, and along the whole length of the Eastern boulevard. The following year (1891) it had so multiplied in New York city that, according to Mr. Southwick, the entomologist of Central Park, more than twenty species of trees and shrubs had been attacked by it, and even vines, as wistaria, had not escaped its polyphagous habit; thus far, evergreens and other strongly odorous trees, as sassafras and ailanthus, seemed to be exempt from its ravages. Two men were constantly employed during the month of May in collecting and destroying the larvæ taken out of the limbs that had broken off as the result of their burrowings. After every high wind, wagon-loads of branches were gathered from the ground and burned. It was being combatted by every possible means, not only by burning the fallen limbs, but by removing from the trees those that by their changing color or withering gave indications of infestation, and also, in the case of the rarer trees, searching for an opening to the burrows and injecting therein the powerful insecticide, bisulphide of carbon.

Shade-tree insects.

The same year it had extended its operations all over the city of Brooklyn. Not an avenue or street therein but gave abundant evidence of its presence. It had also spread, according to Mr. Pike (*loc. cit.*) to Astoria, New Rochelle, Jamaica, New Lots and Flatbush, on Long Island. The injuries caused by this borer are quite serious. In young maples, it attacks the trunk near the ground, as already stated, and so weakens it with its large burrows running around the tree as to cause it to break with the wind and fall to the ground. In the elms, different species of which it attacks, its operations, so far as observed, are confined to the limbs and branches, which are so weakened by the burrows (of often a half inch or more in breadth) that they fall from their own weight, or even with a moderate wind, the branches thus broken ranging from a half-inch in diameter to more than five inches.

Already many of the larger elms in Central Park have had their symmetry and natural beauty greatly impaired through this zeuzera attack. We are not told that any have been killed, but such a result might follow should the insect become sufficiently numerous to invade the entire tree. We do not know that any better methods can be used to arrest this increase than those that are employed at present at Central Park, unless some means may be devised for destroying the eggs of the moth before the hatching of the larvæ and their entrance into the tree.

An Elm-Tree Bark-Borer.—The preceding attack is as yet quite local in our state, yet destined, we fear, not long to continue so. Throughout the entire state, and beyond its limits, the beautiful white elm, *Ulmus Americana*, which has been so liberally planted and so highly prized as our most valuable shade-tree, is suffering from the ravages of a hidden and insidious enemy, and dying one by one from a cause not apparent, and known to but a few. This is chargeable to the operations of one of our longicorn beetles, named *Saperda tridentata*, the larvæ or grubs of which work in the inner bark and sap-wood of the trunk—the attack apparently commencing not far above the ground and gradually extending upward. When the grubs are numerous, their broad, flat burrows so reticulate and run into one another as to effectually girdle trunks of two to three feet in diameter, when, with the circulation arrested, the death of the tree inevitably follows.

Elm-tree bark borer.

No effective remedy against this attack has as yet been found. It is probable, however, that where it has not proceeded too far, protection may be attained in coating the bark with some thick repellant substance (of which carbolic acid and Paris green should be components), that would repel egg-deposit or prevent the passage through it of the newly-hatched larva. This coating would not need to be applied to the entire trunk, but might be limited to a broad zone of several feet, at and beyond that part where the burrows of the preceding year were mainly run—to be found by removing portions of the bark which will readily scale off from the deserted older infested portions.

A still better remedy, I think, would be the following: Remove the outer bark from the entire infested portion of the tree in the spring (occupied at the time by the larvæ or the pupæ) by shaving it down to the inner bark until the first indications of the fresh burrows are disclosed. A kerosene emulsion of good strength brushed over the shaven surface would kill the insects, after which a coating of some thick substance, as lime and cow-dung, should be applied to prevent the splitting of the sap-wood from exposure to the sun, drying winds or extreme weather.

That the barking of elms to even a greater extent than the above may safely be resorted to appears from experiments made in France by M. Robert, detailed in the *Gardeners' Chronicle and Agricultural Gazette* for April 29, 1848, and quoted by Dr. Packard in his recent report on "Insects Injurious to Forest and Shade Trees," as follows:

"The whole of the outer bark was removed from the elm. (This may be done conveniently by a scraping-knife shaped like a spoke-shave.) This operation caused a great flow of sap in the inner lining of the bark (the liber), and the grubs of the scolytus beetle were found in almost all cases to perish shortly after the treatment was applied on a large scale, and the barked trees were found, after examination by the commissioners at two different periods, to be in more vigorous health than the neighboring ones, of which the bark was untouched. More than two thousand elms were thus treated."

M. Robert had also obtained good results from cutting strips about two inches wide out of the bark of old elms, from the boughs down to the ground. "It was found that where the young bark pressed forward to heal the wound, and a vigorous flow of sap took place, many of the larvæ near it were killed, the bark that had not been entirely undermined was consolidated, and the health of the tree improved."

Elm-tree bark borer.

For a long period of years, the elm had been remarkably free from insect attack, but now it is struggling for existence against four insect destroyers so pernicious in their operations that we are almost compelled to look upon it as a doomed tree. The zeuzera is robbing it of its beautifully branching top; the elm-leaf beetle is defoliating it and rendering it in midsummer useless for shade; the caterpillars of the white-marked tussock moth (*Orgyia leucostigma*) are skeletonizing its leaves, and arresting terminal growth by amputating the ends of the twigs and strewing them over the ground; and, lastly, the three-toothed saperda—the most dangerous of all—is running its mines through sap-wood and liber so closely and tortuously that the death of the tree is the inevitable result.

It is to be sincerely hoped that should the suggestions above made for staying the ravages of the last named insect not prove to be practicable, other means may be found so efficient and so simple as to lead to their general use by individuals and by city authorities; and that the steady progress northward and westward over the state of the other two elm-destroyers—the zeuzera borer and the elm-leaf beetle—may be stayed, and the most beautiful and serviceable of our shade-trees be spared to us and to coming generations.

Experiment Station Publications.—The work of the experiment stations during the past year has developed results which are of considerable value to the members of this society. I will briefly refer to a few, citing the bulletins where they are more fully detailed, in order that those who so desire may make application for them to the several stations and procure copies before the editions shall be exhausted.

Pear psylla

The Pear Tree Psylla.—Mention has been made of the remarkable cessation during the past year of the ravages of the pear tree psylla in the Hudson river valley. This insect is not confined to the eastern part of the state of New York and portions of the eastern states adjoining, but it also occurs in central and western New York, as yet not in great abundance; but pear orchards are at any time liable to an outbreak of it.

A careful study of the insect has been made at Cornell University by M. V. Slingerland, and its results published in an illustrated bulletin of 28 pages, being Bulletin 44, October, 1892, of the University Agricultural Experiment Station. Its life-history has been worked out and the remedies available for its destruction are given. Of the various remedies experimented with, the most efficient was found to be kerosene emulsion sprayed upon the insect while in its larval stage, before acquiring wings. A single spraying with the standard emulsion, reduced with 25 parts of water (less than 3 per cent. of kerosene) killed, as estimated, from 75 to 90 per cent. of the larvæ. The early spring, just after the leaves had expanded, proved to be the best time for spraying. In the experiments made, the unexpected result was obtained that the freely exposed eggs of the psylla were not to be killed by spraying with undiluted kerosene, or even by immersing them in the liquid.

Blackberry insects.

Insects Injurious to the Blackberry.—In Special Bulletin N of the New Jersey Agricultural Experiment Station, November 30, 1891, Professor J. B. Smith, entomologist, has given popular descriptions, accompanied with illustrations, of the more destructive blackberry insects, with suggestions regarding the remedies to be used against them.

Insects Injurious to Young Fruit-Trees.—The entomologist of the Oregon Agricultural Experiment Station, in Bulletin No. 18, for March, 1892, has given popular accounts, with suggestions as to remedies, for a large number of the insect enemies of young fruit-trees.

Grape vine leaf-hopper.

The Grape Vine Leaf-Hopper.—Mr. Townsend, the entomologist of the New Mexico Agricultural Experiment Station, in writing of this insect, often referred to as the "thrips," states: "For some time after the hatching of the eggs, the minute young are to be found mostly on the lower, older leaves. Kerosene emulsion has been conclusively proved as the only practical remedy for them. It should be diluted with fifteen times its volume of cold water, and applied *as soon as the young hoppers appear*, thoroughly reaching with the spray the under side of all the leaves, especially the lower ones. If deferred until they have acquired wings, it would be too late to attempt to destroy them in this manner. Vineyards sprayed only once the past season with the emulsion, as above directed, showed thereafter not enough hoppers to do any injury for the remainder of the season, the same vines having been very plentifully infested before the application."—*Bulletin No. 5, March, 1892, New Mexico Agr. Exp. Station.*

It is strange, when this insect can be so easily destroyed, that there should annually appear in the *Vineyardist* and other papers so many complaints of severe injuries sustained from it.

The Strawberry Weevil.—M. H. Beckwith, of the Delaware Agricultural Experiment Station, in Bulletin No. 18, for September, 1892, has written of this weevil, *Anthonomus musculus*, which works in the buds and blossoms of the perfect-flowering varieties. Its larvæ penetrate the center of the blossom (the ovary or the rudimentary berry), thereby blasting the berry. Kerosene emulsion and powdered hellebore in water are recommended for use against it.

Strawberry insects.

A New Strawberry Slug.—Professor Herbert Osborn, of the Iowa Experiment Station, reports successful experiments in killing the green strawberry slug, *Monostegia ignota*, which in the early part of June had extensively eaten the leaves of a strawberry patch on the Station grounds. They were thoroughly sprayed with one pound of London purple to 200 gallons of water. The fruit was partially grown at the time. Further injury ceased within two or three days, and the slugs were killed, as shown by the presence of their dead bodies. Two and one-half gallons of the spray had been applied to a patch of nearly one square rod, containing about

40 grains of arsenic. Estimating that the fruit—about six quarts—had received one-tenth of the spray distributed, or about four grains, and that one-half of the amount of the spray would have been equally effectual, and accepting two grains of arsenic as a dangerous dose, it appears from these data that upwards of twelve quarts of the ripe fruit would have to be eaten to give a fatal dose of the arsenic.—*Bulletin No. 18, Iowa Agr. Exp. Sta. August, 1892.*

Protection from the Cabbage Maggot.—In the Eighth Annual Report of the Wisconsin Agricultural Experiment Station, for the year 1891, Professor E. S. Goff has presented very successful results in protecting cabbage and cauliflower plants from the attack of the cabbage-fly, by surrounding the stalk of the plants at their setting with small hexagonal discs of tarred paper, rapidly cut from sheets by means of a tool devised for the purpose. It seems to be the most successful method yet discovered for protection against this most annoying pest of truck-farmers and gardeners, which often destroys entire crops of early cabbages and cauliflowers. For details of the method, the report cited may be referred to, or an article contributed by me to the issue of *Gardening* for January 29, 1893.

Cabbage maggot.

Kerosene for the Aphis.—Professor Goff has also experimented with kerosene emulsion for destroying the eggs of the aphis infesting apple and plum, during the winter, while there were no leaves to interfere with the distribution of the insecticide. The experiments were not successful, for although emulsions of the strength of 20, 25 and 30 per cent. were used, it was subsequently found that the sprayings had failed to destroy the eggs. Full success, however, was attained by a spraying of emulsion containing 13 per cent. of kerosene, April 24, just as the buds of the apple were beginning to burst. The aphides were hatching from the eggs at this time, and they were almost entirely destroyed. This, therefore, may be accepted as the most vulnerable period in the life of the insect. (See the report above cited.)

Aphis.

Soapsuds for the Cabbage Aphis.—Kerosene emulsion has been recommended for killing the plant-lice that often congregate in immense numbers on the leaves of cabbage, but if the emulsion is used of the proper strength to kill the insect, it also imparts a permanent flavor of kerosene to the plant. In trials made at the South Dakota Station of various insecticides, strong soapsuds gave better satisfaction than any other remedy and proved highly efficacious. While most fluid applications were found to roll off from the aphides without wetting them, the soap solution readily penetrated the gray powdery substance which covers their body, and killed them.—*South Dakota Agr. Exp. Sta., Bulletin No. 30, March, 1892.*

Rose pests.

Plant-Lice and Red-Spiders on Rose-Bushes.—Professor C. H. Fernald, of the Hatch [Mass.] Agricultural Experiment Station, reports that potted rose-bushes of different varieties, every twig of which was literally covered with the aphides, and more or less the surface of the leaves, and also having the red-spider exceedingly numerous on the leaves, were inserted and held for about a quarter of a minute in a pailful of kerosene emulsion, with this result: Two days thereafter, examination of the bushes failed to show a single living plant-louse or red-spider, and none appeared on them for the rest of the season.

Insecticides and Spraying.—A few notes on what is being done in spraying for insect pests, and on some new insecticides, may not be out of place at this time.

Tent-caterpillars.

Experiments with Paris Green on Tent-Caterpillars.—Professor Fernald reports that with one pound of Paris green to 1,000 gallons of water, all the caterpillars placed on the leaves died within twelve days. One pound to 150 gallons of water burned the foliage and injured the tree considerably The best proportion for use on apple trees appeared to be one pound of Paris green to 200, 250 or 300 gallons of water; even the last-named strength killed all the caterpillars within two days. With a dilution of 400 gallons, all were dead in three days.

Paris green for gypsy-moth.

Paris Green on the Gypsy-Moth Caterpillars.—That Paris green has failed to give entire success in killing the ocneria caterpillars is the statement made in the report of the Gypsy-Moth Committee. The mixture used by them would seem to be an excellent one, viz.: One pound to 150 gallons of water and two quarts of glucose. The glucose held the poison on the leaves during hard showers, and proved to be a useful addition, and preferable to any other substance tried for prolonging the effects of the arsenite. Yet this, they state, while destroying the young caterpillars, failed to kill those that were nearly mature. A grove of trees that was twice sprayed with a strength of one pound to 100 gallons of water was afterwards entirely stripped of its leaves. Although many of the caterpillars were killed, there were afterwards gathered from under the same trees over 1,100 living pupæ of ocneria. The Paris green used was several times analyzed, and found to be fully equal to any in the market.

It is difficult to believe that foliage sprayed with a strong mixture of Paris green will not kill all caterpillars that feed freely upon it, and the statement above made needs confirmation. It is not impossible that the nearly mature caterpillars which were not killed may have fully matured and ceased feeding preparatory to their pupation, or the observations may have been made during the two or three days of cessation from food that may precede the last of the larval moltings.

Spraying for the Codlin-Moth.—The following is quoted from the *American Cultivator* of January 2, 1892: Two trays of unassorted apples, each containing one hundred specimens, the fruit in one tray being taken from a sprayed tree and the other from an unsprayed one adjoining were divided into three grades, No. 1 being perfect apples; No. 2 having one or two blemishes, and No. 3 being almost worthless. In the tray from the unsprayed tree there were 4 perfect apples, 58 second class and 38 culls, while the tray filled from the sprayed tree contained 84 first class, 9 second class and seven culls. (*Insect Life*, iv. 1892, p. 288.)

Codlin moth.

E. G. Lodeman reports, in the Cornell Bulletin 48, signal results in spraying for codlin-moth in the very wet season of 1892.

Spraying for the Plum Curculio.—Reports from a number of fruit-growers in Ohio indicate that spraying with Paris green is considered an effective remedy for the plum curculio. It is thought that two ounces of the green to 50 gallons of water is sufficient if three or four applications are made during the season, and that the use of the dilute Bordeaux mixture in connection with the insecticide will prevent injury to the foliage. The mixture of fungicides and insecticides was also used with beneficial effects on pear trees attacked by the curculio. (Abstract in *Experiment Station Record*, from Ohio Station, Bulletin No. 9, vol. iv. December, 1891.)

Curculio.

Spraying for curculio.

From an address made by W. J. Green, before the Ohio State Horticultural Society at its last meeting and reported in the *Country Gentleman* of January 12, 1893, it appears that while the effectiveness of arsenical spraying for the curculio is conceded, it cannot be done with sufficient frequency during the long period of the curculio's presence—from May to August—without injuring the foliage and causing the leaves to fall. A large degree of protection, however, to the foliage may be secured by using a dilute Bordeaux mixture with the Paris green. The following is the formula given: Lime, 4 pounds; sulphate of copper, 4 pounds; Paris green, 4 ounces; water, 50 gallons. This mixture was found satisfactory for European plums, but damaged the American varieties. With the Paris green reduced to two ounces, very little harm resulted, but it was questioned if this proportion of the arsenite would prove effective against the curculio.

New insecticides.

A New Contact Insecticide.—The Gypsy-Moth Committee in Massachusetts has found by experiment that the soap-powders, such as "Gold Dust" and "Babbitt's Continental Washing Powder," are deadly to caterpillars when properly applied, and were efficient in killing both the caterpillars and the pupæ of ocneria. "Babbitt's 1776 Soap Powder" was used in the proportion of one pound to six gallons of water, the powder being first dissolved in a little warm water, and sprayed upon the congregated caterpillars until they were well soaked with the liquid. It was thought that the "Gold Dust" gave the most uniform results. Unfortunately, "these solutions cannot be used for spraying tender plants, as they injure the foliage. They can be used only on insects that cluster about the trunks of trees or smaller objects." (Forbush.)

Creosote Oil as an Insecticide.—For killing the eggs of the gypsy-moth, the committee found that creosote oil, applied to the clusters by means of a brush so as to saturate them, penetrated and killed the eggs at once. The oil is made by the Carolina Oil and Creosote Company, at Wilmington, North Carolina, and is sold at fifteen cents a gallon by the barrel.

Experiments should be made to test the efficacy of this oil on the apple-bark and other scale insects, and on the eggs of such insects as have failed to be killed by applications of kerosene, as those of the pear-tree psylla, the squash-vine borer (*Mellitea curcubitæ*), and the squash-bug (*Anasa tristis*).

A Cheap Insecticide.—The assistant chemist, B. W. Kilgore, of the North Carolina Experiment Station, has proposed the following cheap arsenite for spraying fruit-trees: A mixture of one pound of the commercial white arsenic and two pounds of lime, boiled together for half an hour in two to five gallons of water, and then diluting it to about one hundred gallons of water. The mixture prepared as above contains absolutely no soluble arsenic, and it was clearly shown that the "burning" or "scorching" of leaves is due entirely to the soluble arsenic present, and is in direct proportion to its amount.

Arsenites and Bordeaux mixture.

Arsenites with Bordeaux Mixture.—Mr. Kilgore also reports: "Practical tests of the effect upon foliage of combinations of Paris green and London purple, each with Bordeaux mixture, were made. These combinations contained one pound of Paris green and one pound of London purple separately in 150 gallons of Bordeaux mixture, and applied to fig, grape, mulberry, blackberry, peach, pear, and apple leaves. Each mixture was tested for soluble arsenic, but none was found in any case. Nor did the slightest injury result to any of the leaves from these combinations. Some experiments were also made with combinations containing one pound of the arsenites to 100 gallons of Bordeaux mixture, with the same results as the above. Both theory and practice show these combinations to be perfectly harmless to foliage and that they may be used with freedom."

These results are accompanied with elaborate tables, on which they are based. The use of lime for neutralizing the injurious effects of the arsenites is in accord with the publications of Professor Gillette, in Bulletin No. 10 of the Iowa Agricultural Experiment Station. Professor Kilgore's experiments were made in July, 1890, but their publication was delayed until a year thereafter. (See Technical Bulletin No. 2, of the North Carolina Agricultural Experiment Station, Raleigh, July 1, 1891.)

E. G. Lodeman, of the Cornell (N. Y.) Station (Bulletin 48), has found excellent results to follow the combination of Paris green and Bordeaux mixture for spraying apple trees to combat codlin-moth and apple-scab. His conclusions upon this point are as follows:

"When Paris green was added to the Bordeaux mixture the fungicidal action of the combination was more marked than when London purple was used in place of Paris green.

"Paris green has a certain fungicidal value, but in this respect it does not nearly equal the Bordeaux mixture.

"The value of Paris green as an insecticide does not appear to be materially affected whether it is applied alone or in combination with the Bordeaux mixture.

"The insecticidal value of Paris green when used with the Bordeaux mixture was greater than that of London purple when similarly applied."

Literature on spraying.

Farmers' Bulletin on Spraying.—A serviceable bulletin for the use of fruit-growers is one published in 1892 by the U. S. Department of Agriculture, entitled "Farmers' Bulletin No. 7. Spraying Fruits for Insect Pests and Fungous Diseases," 20 pages. It discusses spraying with kerosene emulsion and the arsenites for insect pests, and spraying from the hygienic standpoint. Spraying for fungous diseases of the apple, pear and other fruits. Does it pay to spray? The fungicides used in spraying. How and when to spray. Treatment of scab, powdery mildew, the leaf-blights, black-rot of the grape, and anthracnose. Use of copper compounds from a hygienic standpoint. This is perhaps the most convenient and reliable bulletin on spraying that has as yet been prepared, and copies may probably be obtained by addressing the Department of Agriculture at Washington.

Bulletins on Spraying and Insecticides.—Several bulletins upon these subjects have been published during the year 1892, and the preceding one, which would be found of service to fruit-growers, florists, nurserymen and others. Among them are the following:

Information on Spraying Fruits. Pennsylvania State College Agr. Exp. Station, Bulletin No. 19, April, 1892.

Insecticides and Fungicides. Michigan Agr. Exp. Sta. Agricultural College, Bulletin No. 83, April, 1892.

The Spraying of Orchards. Ohio Agr. Exp. Sta., Wooster, vol. iv. No. 9, December, 1891.

Experiments with Fungicides and Insecticides. Hatch Exp. Sta. Amherst, Mass. Bulletin No. 17, April, 1892. 11 plates.

Injurious Insects and Insecticides, Spraying Machinery. Delaware College Agr. Exp. Sta. Newark., Bulletin No. 12, March, 1891.

Kerosene Emulsion. Michigan Agr. Exp. Sta. Bulletin No. 76, October, 1891.

Spraying for Insect and Fungous Pests of the Orchard and Vineyard. New Jersey Agricultural College Exp. Sta. New Brunswick, Bulletin No. 86, April 4, 1892.

Spraying Apple Orchards in a Wet Season. Cornell University Exp. Sta. Bulletin No. 48, December, 1892.

Insect bounties.

Bounties for Insect Pests.—Garden and Forest, for December 21, 1892, records an interesting "campaign against the tent-caterpillar." The apple-tree tent-caterpillar has for several years past been an almost unendurable nuisance in various parts of Massachusetts, particularly in the vicinity of Boston. Entire trees and shrubs are completely stripped of their leaves, converting the fresh spring foliage into a painful and depressing scene, and robbing walks and drives of their natural rural beauty.

In order to arrest or mitigate, if possible, this evil, the Newton Horticultural Society and the Newton Center Improvement Association prepared and widely distributed a circular illustrating the insect in its several stages, giving a full description of its eggs, and offering prizes for the collection of the egg-belts, to be brought to the Horticultural Society before April 1. As the result, $75 were distributed in prizes and gratuities among the competitors, the first prize of $15 being given to a young lad who presented over 15,000 belts. The above effort having effected the destruction, as estimated, of 25,000,000 of eggs during the year, the society is encouraged to offer for the following year a reward of $1 for every thousand belts brought in, and has invited contributions, that the work may be successfully carried on.

I would heartily recommend this method for localities in New York where the tent-caterpillar has become unusually abundant. Could other of our wide-spread insect pests be controlled by similar means, it would be a wise economy to employ children in the work by the payment of suitable rewards. Unfortunately, few insects offer so vulnerable a point of attack as does the apple-tree tent-caterpillar, in its shining egg-belt on a leafless tree. In cities and villages where the white-marked tussock-moth, *Orgyia leucostigma*, frequently strips the elms and horse-chestnuts of their foliage, the devastation for another year could be stayed by offering a certain sum per thousand, or by weight or measure, for the egg deposits of the moth on its cocoon—so conspicuous in their snowy whiteness on the trunks and lower branches of trees, and beneath window-sills and copings, during the months of August and September, or before they have become dingy from weathering.

§ 4. *National Educational and Legal Interests.*

There have been fewer horticultural discussions of a general character in 1892 than in 1891. Attention has been closely absorbed in the preparations for the Columbian Exposition. The Nicarauguan canal project has awakened much interest among California horticulturists, who hope for cheaper rates to old world markets upon the completion of the canal. The movements most intimately affecting the fruit interests are the efforts to discourage the use of returnable packages, and the investigations concerning the pollination of orchards. The gift package—one which is sold with the fruit—has been growing in popularity for some years, and the agitation of the year, particularly in New York, will undoubtedly soon install its use in all the leading markets. The Central Association of Retail Merchants of New York and vicinity has issued the following circular to the growers, shippers and receivers of berries throughout the United States:

Discussions of the year.

"This Association has made a thorough canvass of the retail grocers of New York city, Brooklyn and surrounding towns, and finds that, to a man, they are in favor of non-returnable crates and berry boxes. Not only are the grocers of these cities of one mind on this matter, but the following extracts from communications from the Retail Grocers' Associations of Philadelphia and Boston show that the grocers of these two great cities are also co-operating with us in this matter.

Gift packages.

"As a matter of health, every argument proves that none but clean packages should be used for berries; and, as a matter of profit, a careful investigation has conclusively shown that the return freights and cartages, and the replacing of packages, broken or otherwise unfit for use, more than equal the cost of packages which can be used as non-returnable.

"But there is no dispute, so far as we know, as to the value and necessity of using such packages. All parties agree except as to the matter of expediency; and, as these conditions and this same difference have now existed for several years, the retail grocers, who distribute the largest part of the goods in question, have concluded that the time for action has come, and have accordingly decided that on and after March 15, 1892, they will refuse to buy any berries, the price of which does not include the non-returnable package.

Gift packages.

"We notify you thus early of our action in order that you may not be taken unawares, and we trust that you will cordially co-operate with us, so that when the time arrives to put our resolution in practice, there will be no ill feeling aroused, and that our differences may be settled amicably."

This action met serious opposition from the Fruit and Produce Trade Association of New York, which thought that the departure was too sudden and radical; but the movement has exercised a useful influence in discouraging the harmful practice of returning fruit packages to growers for further use.

A bill passed the New Jersey Assembly early in the year providing that a peach basket shall be 12½ inches [broad ?] at the top and shall hold just half a bushel. Every basket must be stamped "Standard, N. J."

The recent striking investigations upon the natural pollination of fruits in orchards are summed up as follows by Fred W. Card:*

Pollination of orchards

"The investigations made by M. B. Waite, of the United States Department of Agriculture, the results of which were presented before the Western New York Horticultural Society, have led to some interesting and valuable conclusions. It has long been a mystery why certain trees and orchards, growing apparently under favorable conditions in every way, failed to yield satisfactory crops of fruit; and these studies suggest what may prove a solution in many cases. The point which Mr. Waite tried to determine was the efficiency of the pollen of fruit-trees on the pistils of the same variety, and his experiments covered trials on the stigma of the same flower, on another flower of the same cluster, on one of a different cluster on the same tree, and on those of different trees. The study of the effect on the ovule of the same flower, and on those of the same cluster, was made, both by simply covering the cluster with paper-bags and by hand-pollinations. The hand-pollinations were made by removing all flowers except the ones to be operated upon, emasculating these before they opened, then keeping them carefully covered with paper bags and applying the desired pollen at the proper time. The results are of especial value, because the number of experiments was very large. The first were made in a large orchard in Virginia, and as the season advanced the work was continued in the orchards of Messrs. Ellwanger & Barry, at Rochester. It was found that a large number of our more common varieties of apples and pears are nearly sterile when reached only by pollen of the same variety. To make sure that failure to fruit did not come from the method of manipulation instead of the inefficiency of pollen, many crosses were made, subject to the same conditions as the individual pollinations, and summaries of the figures were given, to verify the conclusions drawn. Observations showed that pears which did develop fruit by being impregnated with pollen of the same variety were generally different in shape from those which were cross-fertilized, being less dilated toward the blossom end, where the seeds are borne. This points toward an imperfect seed-development, even though the pollen had sufficient potency to develop the fruit. If the attempt were made to grow such seeds it would not be surprising to find most of them unfertile.

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* Garden and Forest, vi. 153.

Pollination of orchards

"The varieties of pears which the experiments thus far indicate to be self-sterile are Bartlett, Anjou, Clapp Favorite, Clairgeau, Sheldon, Lawrence, Mount Vernon, Gansel Bergamotte, Superfin, Pound, Howell, Boussock, Louise Bonne de Jersey, Souvenir du Congress, Columbia, Winter Nélis, Bosc, Jones Seedling, Easter and Gray Doyenné. Those which appear to be self-fertile are White Doyenné, Le Conte, Kieffer, Duchess, Seckel, Buffum, Manning Elizabeth, Flemish Beauty and Tyson.

"Among apples the following were found to be self-sterile: Talman Sweet, Spitzenburgh, Northern Spy, Chenango Strawberry, Bellflower, King, Astrachan, Gravenstein, Rambo, Roxbury Russet, Norton Melon and Primate ; while Codlin (partially), Baldwin and Greening are self-fertile.

Self-sterile apples and pears.

"The inefficiency of pollen in fertilizing flowers on the same plant is well known among vegetables, a fact which presents one of the chief difficulties in breeding new varieties. This is well illustrated by experiments with cucurbits at Cornell University. In the season of 1889 there was found among the many crosses being grown one squash which appeared to possess qualities which would render it valuable for cultivation. The seeds of this were planted the following year, and among the large number of plants thus produced there was found just one, the fruit of which resembled that of the parent. This was a discouraging outlook for that line of breeding, and that year the attempt was made to fix this type by individual pollination. The earliest blossoms had been crossed before the character of the fruit was known; this produced a perfect fruit, but all those furnished with pollen from the same plant grew for a brief time, withered and died. Other forms appeared throughout the field which seemed desirable, but only one plant of a type, so that crossing could not be resorted to, and to plant all the seeds, with the expectation of a crop with few or none like the parent, was out of the question. Individual pollination was the only way, and this proved the same in every case; of the 185 flowers thus treated that year, not one produced fertile seeds, although twenty-two carried fruits through to maturity. It was a tantalizing effort to watch forms more attractive than any in cultivation apparently within the grasp, and yet so far from it.

Self-sterile plants.

"Hitherto this similar condition of affairs has not been suspected in fruit-planting, especially the fact that pollen from one tree may be unable to fertilize the blossom of other trees of the same variety. The first thought is to account for this latter fact by the much closer affinity of the same variety of fruit than of the same variety of vegetable produced from seed, owing to the very different physiological principles upon which they are propagated. To account for the opposite behavior of different varieties of the same fruit is not so easy, but, whatever may be the underlying cause, it will be of great interest to note whether two plants of the same variety which have been propagated from the same source, and under the same climatic and other conditions, will behave toward each other the same as two which have been subjected to very different conditions, both in the present and past generations.

"The history of the Virginia pear-orchard which led to these investigations is an interesting one. Many years ago the owner ordered a few trees of different varieties from a firm in New York state. These, being planted near together, proved so satisfactory that he ordered a large number of Bartletts alone for a commercial orchard. These were planted in a single block, and never bore satisfactory crops, with the exception of a few of the trees surrounding the original planting of mixed varieties. The disappointment, owing to failure of the undertaking, led to inquiries, which brought about the present investigations. The orchard of Ellwanger & Barry, on the other hand, being largely of specimen trees, with but few of a kind, presents just the opposite conditions, and is noted for its productiveness.

Sterile orchards.

"It has been well known that certain varieties of raspberries and grapes have proved unproductive unless planted near other sorts, but this has been attributed to a deficiency in the amount of pollen produced. Closer observations may show that in some cases it is due rather to a lack of potency than to a lack of quantity.

"In the transactions of the Illinois Horticultural Society for 1886 a case is reported in which the behavior of the dewberry seems to bear on this point, One hundred plants were ordered of a nurseryman and set by themselves. These grew vigorously and blossomed full every year, but yielded only a few imperfect berries. Later it so happened that a plot of blackberries was planted beside them; when these came into bearing the dewberries began to fruit, and continued to do so regularly.

"It is very evident that the practical lesson of these experiments is an emphatic warning against planting orchards in large blocks of a single variety, or planting isolated specimens for family use. It may succeed, but the chances of failure are far too great."

Education.

Education in horticultural directions grows slowly but apparently surely. The most gratifying feature of the movement is its rise in England*, which, of all countries, may be considered to be the chief in appreciation of plants and gardens. The Royal Horticultural Society, through the county councils, has instituted a series of lectures upon horticultural topics in various parts of England. In the autumn and winter of 1891-2, the Surrey county council instituted a series of examinations upon the lectures, with gratifying results. Although some conspicuous and influential men are opposed to horticultural instruction*, the subject appears to be well received in general. In the winter of 1892-3 a series of lectures upon "the scientific and practical aspects" of horticulture was inaugurated at Edinburgh by the council of the Scottish Horticultural Association. This is the first attempt of the kind in Scotland. Bursaries—or cash prizes—were given to certain under-gardeners and nurserymen who attended three-fourths of the lectures, and satisfied other requirements. The subjects of instruction were "The Chemistry of Plants and Soils;" "The Structure and Physiology of Cultivated Plants;" "Hybridization, Selection and Improvement of Plants;" "Hardy Fruits;" "Apples;" "Apricots and Cherries;" "Peaches and Nectarines;" "Plums;" "Strawberries;" "Pears;" "Gooseberries, Currants and Raspberries." The lectures were all given in the evening.

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* Annals for 1891, 147.

Horticultural instruction.

"The future of horticulture," *British Gardening* declares, "will be something altogether superior to anything we have yet seen; it is gradually developing into a science as much superior to the horticulture of the past as are our railway coaches to the lumbering old stage coaches of the days of our grandparents. The comparisons are analagous. No longer must the gardener who intends to make headway content himself with the old-fashioned methods which were practised fifty, or even twenty years ago. The light of horticultural science, like a 'search light,' is spreading far and wide, and under its rejuvenating influence old-fogyism must die. Had England only awoke up to her duties, so far as horticulture is concerned, twenty years ago, and have given us the advantages which she now offers, we should have been in a much better position than we are to-day. The foreigner would never have been able to monopolize our markets with his importations as he now does, nor would fruit and vegetable growing at home have fallen to such a low ebb. We should have been more independent, and, instead of importing the quantities of fruit which we annually do, might have been exporting large quantities of better grown produce than any which reaches our shores from other countries. English fruit, well grown, will always command its price, and no foreign produce can compete against it. We have a proof of this in the high price which English grapes are at the present time commanding in the American markets. We are prepared to admit that, to a large extent, we shall always be dependent on foreign supplies, and it would be madness to say anything to the contrary. What we urge is that with proper attention, better fruit could be grown at home than any which we import, and that this fruit commands a better price abroad than at home: then why not export more of it, and in return for all the money we put into the foreigner's pocket gather back some of his into our own? This we shall do in the future, and, thanks to the progressive tendency of the age, the 'day of brighter things' has dawned. The lecturers employed by the county councils and the horticultural colleges are doing much towards dispersing the gloom which has for so long enshrouded horticulture. With the instruction imparted by these agents progress will be made. It is highly essential that every gardener should have a technical education; as the result of this he will be able to choose his produce more wisely and raise it with all the care which fine culture requires; remunerative prices will then be commanded. This is the most pleasing phase of the future, and it is the standard which we shall reach in a very few years' time."

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*Kew Bulletin No. 62, p. 41 (Feb. 1892).

Need of education in England.

France has long had an efficient system of agricultural instruction,* to which has been added during the year the first professorship of landscape gardening in existence, at the École Nationale d'Horticulture at Versailles, and to which Edward André has been called. Belgium, Germany and other European countries are equipped with several technical garden schools. Following are some isolated accounts which indicate the extent and character of horticultural and kindred teaching in some European schools:

Education in France.

The National School of Horticulture at Versailles had this year 72 candidates for admission, of whom 64 entered. This is the greatest number ever admitted at once. Twenty-one "departments" of France are represented, showing that the students came from all parts of the republic. The above shows that technical scientific studies are being more and more appreciated, and that the taste for horticultural pursuits is steadily advancing.

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*For a good sketch of agricultural education in France, see Expt. Sta. Record, iii. 440 (Feb. 1892).

A Course in Arboriculture is given by Mr. Chargueraud, professor of arboriculture of the "Ville de Paris," upon the theory and practice of growing trees and their use in decoration. It consists of 10 lectures and 30 hours devoted to practical work. The course is as follows:

Education in France.

Lectures. Elements of vegetable physiology, geology, chemistry and physics, general principles of culture, manures, watering, nurseries, greenhouses and orangeries, propagation, growing and preservation of plants, treatment of diseases, destruction of insects, planting of rows (alignment), studies of the best "methods;" ornamental planting of parks, gardens and squares; choice in the grouping of plants.

Practical Lessons. The starting and maintenance of plantations, care in cultivation, pruning, studies of the plantings in public places of the city, including neighboring parks.

The final examination at the Royal Horticultural School at Wildpark, Germany, was as follows, the first five being written, the last set oral:

1. *Dendrology.* Fam. Oleaster.—(a) Enumeration of the species and varieties, with methods of propagation; (b) use of those enumerated in parks and gardens; (c) how pruned.

2. *On the technique* of landscape gardening. The grade of a proposed drive is given. Tell the estimated cost of the various operations, raising and lowering grade, general slope, material used, grass seed.

Instruction in Germany

3. *On Manures.* The most avilable manures.—(a) Composition regarding plant foods; (b) treatment of stable manure; (c) use of artificial manures in the fruit garden.

4. *Physics.* The barometer, and its value as a weather prophet.

5. *Mathematics*, three problems, two given. By what sum must a capital of 325 marks, drawing compound interest at 3½ per cent., be increased each year so that at the end of 12 years it shall amount to 1,500 marks? What must be the dimensions of a basin which shall contain 100 bbls. of water, the upper diameter being to the depth as 10 to 1?

6. *Botany.* Conifers, their structure, propagation, distribution, having particular reference to *Abies.*

Instruction in Germany.

1. Plant culture. Name the spring flowering plants, out-of-doors and under glass.

2. Theory of landscape gardening, general course of walks, and appropriate plants for them.

3. Botany. Plant physiology, systematic botany, with particular reference to the fertilization of flowers, and germination.

4. Agricultural chemistry. Origin and composition of soils.

5. Practical horticulture. Strawberry culture.

Students graduate as finished skilled gardeners.

In America, the chief item of interest is the successful extension of short or winter courses of lectures and laboratory practice to several colleges and universities.

California botanic garden.

A botanic garden for the preservation of California red-woods has been established during the year, by the donation in trust of 640 acres of red-wood timber land in Sonoma county by Col. J. B. Armstrong, of Santa Rosa. The tract is on the north bank of the Russian river. The timber is in a good state of preservation. The trustees of the garden are Miss Kate Armstrong, daughter of the donor; E. J. Wickson, Charles H. Shinn, Luther Burbank and Robert U. Johnson.

Division of Pomology.

The work of the Division of Pomology of the Department of Agriculture during 1892 has been mainly along lines heretofore indicated.* Considerable progress has been made in the preparation of reports on various lines of fruit culture. The report on nut culture in the United States, the publication of which has been delayed by the preparation of illustrations, it is now expected will be issued early in 1893. The report on small fruit culture will soon follow. Work on the report on apple culture, which will be based on returns made by growers during two seasons of observation, will next be taken up, the preparation of the preliminary list of varieties being already well under way. It is possible that the preliminary list of varieties will be issued before the complete report is ready for publication, as fruit growers and exhibitors feel the need of an authoritative nomenclature and synonymy in view of the preparation for the fruit exhibits at the Columbian Exposition. The more prominent importations made for distribution during the year have been of chestnuts from Catania, Sicily; orange trees from Rio Janeiro, Brazil; varieties of kaki supposed to be hardy from Japan and Korea; and seeds of *Myrica rubra* from Japan. Three varieties of the grapes imported from Persia as rooted cuttings in 1890 bore a few clusters of fruit at National City, California, this year, and two of these promise to be valuable varieties for the semi-tropical portions of the country. Their dissemination will proceed as rapidly as they can be propagated. An attempt is now being made to secure other varieties of grapes said to be successfully grown in the colder portions of Persia, and described by travelers as of superior quality for table use and raisin making. An attempt to secure a supply of fresh seed of the kola nut (*Sterculia acuminata*) from Grenada, West Indies, was unsuccessful owing to unreliable transportation facilities. The uncertainty and irresponsibility of the prevailing means of transportation in tropical regions makes the importation of delicate seeds exceedingly difficult, and in many cases impossible to accomplish, except by repeated trial. Wherever it is practicable it has been found best to have trees grown and potted for shipment, with careful directions for the watering and care of the same while in transit. This method often delays the receipt of desired varieties for one or two years, but it is found to be safer and surer to accomplish the desired result.

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* Annals for 1889, 72; Annals for 1891, 135.

Division of Pomology.

Though the general crop of tree fruits has been smaller than common, the receipts of specimens for indentification and examination have continued to be heavy at the Division. Careful attention is paid to such receipts, as it is believed that much practical good is accomplished for the growers thereby. This is particularly true for such as live in regions where fruit culture is a new enterprise. The pioneers in tree distribution are usually the retail nursery salesmen, and either through carelessness or intentional deception the early orchards are often found to be composed largely of mixed varieties whose identity is unknown to any one in the neighborhood. The dissemination of information and the rapidity with which profitable orchards can be established is thus often seriously checked by ignorance of the names ot varieties that succeed, as well as of those that fail. It is nof always possible to determine varieties positively by the fruit alone, and an increased appropriation for the necessary expenses of inspection of orchards in little known but promising fruit regions would greatly add to the value of this work. It is now carried on in a desultory manner as attendant circumstances permit and the urgency of the situation in various localities demands. The most important tours of inspection in 1892 were made in the strawberry districts of Florida, South Carolina and North Carolina, the general fruit districts of Colorado and an inspection of the orchards of hardy apples in Minnesota and Wisconsin. Brief reports concerning these and descriptions of the more valuable new fruits received during the year are included in the published report of the Pomologist for 1892.

Citrous laboratory.

Citrous Fruit Inquiry. A sub-tropical laboratory has been established in Florida for the investigation of citrous fruits The cultivation of citrous fruits in this country is fast coming to the front as an industry of primary importance. In Florida alone there were 39,000* acres in bearing orange trees in 1889, while the value of the crop for the year was, in round numbers, $4,300,000. The other citrous crops are not so important, but altogether the industry is one in which a vast amount of money has been and is being invested. It is safe to say that there is no branch of horticulture in which so much genuine interest is shown as in the growing of these crops. Almost every orange grower one meets is an enthusiast, being constantly on the alert for new ideas, and not hesitating to put his own pet theories to the test of field experiments if necessary. While there are a few well known and generally accepted principles bearing on the cultivation of the orange and other citrous fruits in Florida, there are hundreds of local theories and ideas on almost every branch of the subject. For example, one will find within a few miles a dozen or more notions prevailing as regards the cause and cure of a certain disease. All this may be looked upon as a healthy sign, for it shows the people to be wide awake. The many differences of opinion are without doubt due to the extreme variability of the crop, the soil, climate and plants themselves all conspiring to make anything like unanimity of opinion out of the question. Where such conditions exist there is, of course, a rich field for scientific research, as it only in the light of facts accumulated by careful painstaking and critical work that the heterogeneous mass of information can be reduced to anything like order.

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*U. S. Census Bulletin No. 161.

Citrous laboratory.

For several years the Division of Vegetable Pathology of the Department of Agriculture has had in view a thorough investigation of the citrous fruits of Florida. A number of efforts have been made to start investigations that would at least throw light on some of the troublesome diseases, but owing to lack of funds, nothing of consequence was accomplished. Recently, however, a more liberal appropriation has enabled the Division to undertake a series of investigations which, it is hoped, will solve many of the questions now being asked by intelligent orange growers. A sub-tropical laboratory has been established at Eustis, in the heart of the orange region. The laboratory building, erected by the citizens of the town, is being fitted up with apparatus of the most modern type for physiological, anatomical and pathological research. A library on citrous fruits, containing works from all parts of the world, has been added, making the equipment, for the present needs at least, fairly complete. The work at first will be mainly upon the diseases of citrous fruits, but it is not proposed by any means to limit the investigations to this field. As the very foundation upon which all subsequent work will rest, a thorough study of the normal physiology and anatomy of citrous and allied fruits must be made. The most troublesome diseases are, in all probability, due to causes which the foregoing studies alone can reveal. Diseases due to parasitic organisms are among the earliest to study, but even here the physiology and anatomy of the plant must be known before a thorough understanding of all phases of the subject can be reached. Besides aiding in the investigations set forth in the foregoing, the physiological and other studies will throw light upon questions of the highest importance in a practical sense. Every intelligent orange grower realizes that it is important to know what influences make some trees early and others late; some trees dwarfed, others large; some bear good fruit, others poor; what causes the longevity of the tree; what determines the superior quality of the fruit on certain trees, and what causes the fruit, when grown on certain kinds of land, to rot early. Such questions can be answered only after long and painstaking studies.

Besides the foregoing, it is proposed, in time, to take up such studies as will throw light upon the effect of stock on cion; the best stocks for the various lands, the advantages of different methods of cultivation, pruning, irrigating, planting, fertilizing and shipping. The improvement of varieties is another important subject that it is hoped may be considered. This field is practically unexplored, and there is no reason to doubt that the harvest awaiting the patient investigator is rich. The work at present is in charge of W. T. Swingle and H. J. Webber, two special agents of the Division. These men are already on the ground, and are being ably assisted by orange growers all over the state.

Citrous laboratory.

Bill to Regulate Shipment of Nursery Stock. The nursery interests were thoroughly aroused early in the year upon the introduction of a bill into Congress by Mr. Caminetti to subject all nursery stock going into California to rigid inspection for insects and diseases. The bill was clumsily drawn, and could not have been executed had it become a law, but the nurserymen of the east saw in it an attempt on the part of California nurserymen to control their market, and they opposed it with great vigor. Although the bill did not pass, it is nevertheless worthy of insertion here as the first attempt towards national control of insects and diseases attacking plants:

Nursery-stock bill.

A bill to prohibit the interstate transportation of trees, plants, vines, or other nursery stock infested with scale insects or codlin moths or other pests, or with their eggs, or larvæ, or infected with any diseases injurious to trees, plants and vines, and the importation into the United States, from any foreign country, of any thereof so affected; to provide for penalties for violations thereof, and defining the duties of certain departments of the United States with relation thereto.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That every person who, either as owner, agent, or otherwise, shall ship or offer for shipment or any railroad, ship, steamship, express, wagon, or other mode of transportation, consigned to any point in the United States beyond the boundaries of the State, Territory, or district in which such shipment is offered for transportation, any trees, plants, vines, or other nursery stock infested with scale insects, or codlin moths, or other pests, or with their eggs or larvæ, or infected with any diseases injurious to trees, plants, and vines, shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be punished by fine not exceeding one thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

SEC. 2. That every railroad, ship, steamship, express, wagon, or other transportation company or corporation carrying or transporting freight from one state to another that receives for shipment or transportation, or has in its possession in its cars, stations, depots, warehouses, or other place of storage awaiting transportation as freight or otherwise, when consigned to any point in the United States outside of the boundaries of the State, Territory, or district where the same may be offered, any trees, plants, vines, or other nursery stock infested with scale insects and codlin moths or other pests, or with their eggs or larvæ, or infected with any diseases injurious to trees, plants, or vines, shall, for every violation of this section, be liable for and forfeit to the United States a penalty of one thousand dollars. This penalty shall be recovered by civil action in the name of the United States in the circuit court of the United States holden within the district where the violation may have been committed, or the company or corporation has its principal place of business; and it shall be the duty of all United States district attorneys and their deputies, and all United States marshals, their deputies and subordinates, to prosecute all such violations which shall come to their notice or knowledge.

Bill to regulate nursery-stock.

SEC. 3. That every conductor, master, captain, or agent of any railroad, ship, steamship, express, wagon, or other method of transportation, who receives for shipment or transportation, as freight or othewise, as such conductor, master, captain, or agent, or has in his possession as such, in any car, wagon, or vessel, or at any station, or depot, or warehouse, or other place of storage, awaiting transportation, when consigned to any point in the United States outside of the boundaries of the State or Territory or district where same may be offered, any trees, plants, vines, or other nursery stock infested with scale insects or codlin moths, or other pests, or with their eggs or larvæ, or infected with any disease injurious to trees, plants, and vines, shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be punished by fine not exceeding two hundred and fifty dollars, or by imprisonment not exceeding three months, or both said punishments, in the discretion of the court.

Bill to regulate sale of nursery-stock.

SEC. 4. That every railroad, ship, steamship, express, wagon, or other transportation company or corporation, carrying or transporting freight, that brings into the United States from any foreign country in any car, wagon, or vessel, or has in its possession at its stations, freight depots, or warehouses, or other place of storage, any trees, plants or vines, or other nursery stock infested with scale insects or codlin moths, or other pests, or with their eggs or larvæ, or infected with any diseases injurious to trees, plants, and vines, shall, for every violation of this section be liable for, and forfeit to the United States a penalty of one thousand dollars. This penalty shall be recovered by civil action in the name of the United States in the circuit court of the United States holden within the district where such violation may have been committed, or the company or corporation has its principal place of business; and it shall be the duty of all United States district attorneys and their deputies, and of all United States marshals and their deputies and subordinates, to prosecute all such violations which come to their notice or knowledge.

SEC. 5. That every conductor, master, captain, or agent of any railroad, ship, steamship, express, wagon, or other method of transportation in which is contained a shipment from any foreign country as freight or otherwise, or has in his possession as such conductor, master, captain, or agent brought from any foreign country for delivery at any point in the United States, any trees, plants, vines, or other nursery stock infested with scale insects, codlin moths, or other pests, or with their eggs or larvæ, or infected with any diseases injurious to trees, plants, or vines, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not exceeding two hundred and fifty dollars, or suffer imprisonment not exceeding three months, or by both said punishments, in the discretion of the court.

Bill to regulate nursery-stock.

Sec. 6. That the several circuit courts of the United States are hereby invested with jurisdiction to try all actions, civil or criminal, arising under the provisions of this act.

Sec. 7. That the Department of Agriculture shall prepare and publish such directions as may enable persons or transportation companies, officers of customs, and United States marshals to guard against the violation of this act, and deliver copies of such to any, upon demand, free of charge: *Provided*, That copies be sent to all officers of customs or United States marshals immediately upon their publication.

Sec. 8. That the Department of Agriculture may appoint agents, whose duty it shall be to enforce the provisions of this act. Any state having officers, or boards, or commissions empowered by the laws thereof to guard against the introduction within their borders of any scale insects, codlin moths, or other pests injurious to trees, plants, or vines, such officers may be appointed agents of said department to enforce the provisions of this act: *Provided*, That no expense is incurred to the United States government is so doing.

Sec. 9. That the officers of customs of the United States are hereby directed to enforce the provisions of this act in their respective departments.

Are watermelons fruits?

Watermelons are fruits. An interesting legal decision, rendered December 30, 1891, establishes the fact that, in the eyes of the law, watermelons are fruits. The litigation arose over an interpretation of a section of the tariff law. It was the suit of Thomas H. Burgess against the collector of customs at Nogales, Arizona. The Board of General Appraisers made the following opinion:

"The goods are watermelons. They were assessed for duty at 25 per cent. ad valorem under the provision of Par. 288 N. T. for vegetables in their natural state, and are claimed by the appellants to be exempt from duty under the provisions of Par. 580 for green fruits.

"Webster's Dictionary, the Century Dictionary, Chambers' Encyclopœdia and other standard authorities enumerate melons among fruits, such as apples, oranges, peaches and berries. Upon the menu cards of hotels and restaurants, the watermelon is named among fruits and not among vegetables. It is a matter of common knowledge that melons are served at table as fruits and not as vegetables.

"The watermelons is known technically and popularly as a fruit. Its classificatian commercially remains to be considered. The only information before the board that is favorable to the classification of melons as vegetables is the fact that melon seeds are catalogued among vegetable seeds by seedsmen, but seedsmen who so list them gave testimony, either in person or by affidavit, that they regard melons as fruit, and that they catalogued melon seeds among vegetable seeds simply as a matter of convenience, both classes being regarded as garden seeds. Common carriers testify that in the business of transportation, melons are classed as fruits and not as vegetables. Large produce dealers gave evidence at the hearing of this case that in trade, melons are known and listed as fruits and not as vegetables. The various commercial and trade journals enumerate watermelons apples, peaches, plums, etc., under the heading of 'fruits.'

Watermelons are fruits.

"It is unnecessary to inquire into the meaning of the words 'fruit' and 'vegetable' in their broadest sense. The tariff details with the terms as common or commercial designations.

"We find that watermelons are green fruits, and so commercially known, and we hold that they are specially provided for under Par. 580, N. T.

"The claim of the appellants is sustained accordingly."

Seed law. The legislature of North Carolina has made a law demanding fresh seeds, which was ratified in 1891:

AN ACT to protect seed buyers in North Carolina. The General Assembly of North Carolina do enact:

SECTION 1. That any person or persons doing business in this state, who shall sell seeds or offer for sale any vegetable or garden seeds that are not plainly marked upon each package or bag containing such seed, the year in which said seeds were grown, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than $10 nor more than $50 or imprisoned not more than 30 days, for each and every offense: *Provided*, That the provisions of this act shall not apply to farmers selling seeds in open bulk to other farmers or gardeners.

Seed law.

SEC. 2. That any person or persons who shall, with intention to deceive, wrongly mark or not label as to date any package or bag containing garden or vegetable seeds, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than $10 nor more than $50, or imprisoned not less than 10 or more than 30 days.

SEC. 3. That this act shall be in force from and after the first day of September, 1891.

Weights and measures. A committee of the American Seed Trade Association, appointed for the purpose of considering the cental system of quotations (per 100 lbs.) of various seeds, adopted the following bulletin, to take effect January 1, 1893, and to be used in preparing catalogues for the spring of 1893:

Weights and measures.

"The advantages to be gained are manifold. The legislatures in the various states have established 'legal weights' stating number of pounds which shall constitute a bushel, and these vary so greatly that much controversy is caused in interstate commerce, which cannot occur under the cental plan. This change will also save considerable labor in receiving, shipping and billing out goods, and do away with a large portion of the vexatious and costly errors which often occur under the old plan.

"We suggest and recommend that clover, blue grass, red top, orchard grass, etc., be quoted by the pound, while timothy, millet, Hungarian buckwheat, and the lower priced seeds be quoted by the 100 pounds.

"At this time we do not recommend that the change include peas, beans, corn, flax, wheat, oats, rye and barley, but from present outlook we believe that it is only a question of time when we can include them all."

Electricity for greenhouse heating.

*Greenhouse heating by electricity.** Gustave Olivet & Co., of Geneva, Switzerland, have recently invented a system of heating greenhouses by electricity. The system approaches the ideal in the workings, but so much power is required that it can scarcely be regarded as economical. The electric current from a dynamo is forced into a receiver made of some metal compound which is easily heated, but only to a certain degree; a current of air is soon produced, and the heat is distributed throughout the house, as when steam is used. The advantages claimed for the system are:

1. Entire absence of any injurious gases.

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*Revue Horticole, 1892, p. 387.

2. The power, or heat, is introduced by means of arching electric light wires.

3. Complete security in every respect, the temperature being always under control.

4. The heat may be turned on or off in a moment.

5. Absolute cleanliness.

6. Cheapness of the outfit. The cost for the most simple one is only 10 fr., not including the dynamo or the conductors.

PART II.

SPECIAL ANNALS.

§ 1. *Introductions of 1892.*

A DESCRIPTIVE RECORD OF ALL THE VARIETIES OF ORNAMENTAL PLANTS, FRUITS AND VEGETABLES INTRODUCED DURING THE YEAR INTO PUBLIC SALES IN NORTH AMERICA.

The following account, compiled with great pains through an extensive correspondence and a critical study of the seed and plant catalogues of the continent, shows that much effort has been given to the securing of introductions for the year, especially amongst ornamental plants. The introductions are considerably less than in 1891, however, a circumstance which shows, along with many others, that there was less horticultural activity in 1892 than in the preceeding year. Altogether, 716 varieties and species were first put upon the trade in 1892. Of these, 503 are ornamental plants, 122 kitchen-garden vegetables, and 91 fruits. The genera or groups in which a dozen or more varieties and species were introduced are as follows: chrysanthemum, 156; carnation, 40; rose, 36; grape, 28; petunia, 26; strawberry, 18; phlox, 17; potato, 17; bean, 14; apple, 12; tomato, 12.*

These annual lists are merely records of the commercial activity of the year, and they attempt neither to designate the plants which have been first introduced to cultivation in private grounds nor to pass upon the merits of the novelties. The descriptions following the entries have been gathered with care, but they are mostly adapted from catalogues or the submitted accounts of introducers, and the editor assumes no responsibility for their accuracy. But the lists must have a distinct value as history, and the merit of each volume must be enhanced as additional years are added for comparison. The editor hopes, therefore, that every horticulturist will contribute his aid in the preparation of future lists.

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* Aside from the varieties included in these footings, the following list contains 27 varieties which were introduced between 1889 and 1892, and which are inserted here for the purpose of completing previous records.

Acer Negundo var. foliis aureis. *W. C. Strong, Waban, Mass.*

Said to be a more vigorous and hardy variety than the well known silver-variegated form. This golden form will probably better endure our hot suns.

Achillea Ageratum. *J. W. Manning, Reading, Mass.*

Showily cut fern-like foliage and large pure white flowers on long single stalks. 8 inches. Greece.

— Mongolica. *Manning.*

Showy, loose, flat heads of pure white flowers; prettily cut foliage. 2 feet.

— ptarmicoides. *Manning.*

Large open, flat panicles of pure white starry flowers. 2 feet.

Æthionema Persicum. *Manning.*

Deep rose flowers in dense heads. 8 inches.

Ageratum Mexicanum. Large Flowering Rose Color. *Henderson.*

Forms bushy, compact plants about 12 inches high, bearing large trusses of rose-colored flowers in abundance.

Allium Bolanderi. *Pilkington & Co., Oregon.*

Native.

Alstrœmeria hæmantha. *Manning.*

Flowers varying in color from orange to brown, with deeper spotted throats. 2 feet.

Alyssum serpyllifolium. *Manning.*

Small linear, rough, silvery foliage; pale yellow flowers in clusters. 4 inches. Europe.

Amorphophallus giganteus. *A. Blanc* and *Dealers.*

The flower is larger than that of *A. campanulatus* (often measuring two feet across), and much more pleasing in color—shading from a deep red to cream color towards the center. The club-shaped spadix is dark maroon, with yellow and red base. After flowering, the foliage-stem appears—a stout stem of deep green color, mottled with gray. After growing at the rate of several inches a day, it expands into a large palm leaf of a rich, dark green color, often measuring 5 feet across.

Andromeda Japonica, var. variegata. *Manning.*

Foliage yellow and green.

Anemone occidentalis. *Pilkington & Co., Oregon.*

Finely cut leaves and solitary white flower in early spring, succeeded by an ornamental head of long, feathery tails. Native.

— Oregana. *Pilkington & Co., Oregon.*

Apple, Bliss. *Geo. J. Kellogg & Sons, Janesville, Wis.*

— Gypsy Girl. *Canadian Horticulturist.*

A handsome winter apple, imported from Russia by the Central Experimental Farm of Ontario.

Apple, Hargrove. *Berckmans, Georgia.*

Size above medium to large, oblate; golden yellow, with a bright carmine cheek. Flesh crisp, white, with pearmain flavor, subacid, quality best. Maturity, October and November. Originated in Haywood county, N. C. Figured in *American Agriculturist*, 1891, p. 701.

— Haywood. *Berckmans, Georgia.*

Large, usually flat, yellow, covered with crimson, with darker cheek and stripes. Flesh white, brittle, subacid. September and October. A seedling of Hoover. Tree very vigorous and very prolific. Origin, Haywood county, N. C.

— Howard's Sweet. *Geo. J. Kellogg & Sons, Janesville, Wis.*

— Kocher. *W. B. K. Johnson, Allentown, Pa.*

— Pioneer. *Chas. E. Pennock, Fort Collins, Colo.*

Origin same as Uncle Ben (see below). Fruit oblong in shape, medium to large in size; color, yellow when ripe; juicy, spicy, subacid, good. Season, November to January.

— Platt. *Geo. J. Kellogg & Sons, Janesville, Wis.*

— Talbot. *F. T. Ramsey, Texas.*

Originated from a seed at Georgetown, Texas. For an eating apple it has no superior. It will keep till Christmas or later. Tree does not over-bear. Ripens in September; color about like Ben Davis; size medium.

— Uncle Ben. *Chas. E. Pennock, Fort Collins, Colo.*

Origin Pleasant valley, Colo., from seed sown by Ben Whidbee in 1859. Original tree now 32 years old. Fruit similar in color and shape to Ben Davis, though of much better flavor. Season, January to June. Very prolific and hardy.

— Vandevere Improved. *Stark Bros.*

— Von Gohren.

Medium size, round, inclined to be conical; deep regular eye, closed calyx, stem ¾ inch, light gold when ripe, with beautiful blush cheek; flesh firm, juicy, mild, subacid, tender; ripens February to April; good keeper and a great addition to our late-keeping varieties. Said to have been introduced in Washington (state) this year. (Rev. S. R. S. Gray.)

Apricot, Cluster. *Ramsey & Son, Mahomet, Texas.*

Originated from Russian seed. The last three years the original tree bore more fruit than all the other varieties combined. It blooms late, but passed through six freezes last spring after blooming, and still bore an enormous crop. Originated with Ramsey & Son.

Aquilegia Bergeriana. *Canadian Horticulturist.*

A deep blue columbine, obtained some years ago from Dr. Regel, St. Petersburg, by the Central Experimental Farm of Ontario. Hardy, and blooms early in the season.

Aquilegia vulgaris, Munstead White. *Manning.*

A hybrid, bearing the greatest profusion of large, pure white flowers of unusual substance, and in continual succession for a space of several weeks, in early spring, in advance of all common garden forms of the family.

Arabis nivalis. *Manning.*

White flowers on good stems. Forms a dense tuft of showy, glossy foliage. 4 inches.

Archangelica hirsuta. *Harlan P. Kelsey, N. C.*

Fuzzy appearance. Handsome leaves. Native.

Arctostaphylos viscida. *Pilkington & Co., Oregon.*

An evergreen shrub 10 to 15 feet high, branching from the base, of very symmetrical growth. The leaves are whitish green, contrasting strongly with the bright red bark of the limbs. It bears a great profusion of pink flowers in early spring. Native.

Areca oleracea. *Reasoner Bros., Oneco, Fla.*

Palm from West Indies.

Arenaria montana. *Manning.*

Forms a mat of showy, grass-like foliage, with pretty white flowers. 3 inches. S. Europe.

Armeria cephalotes var. formosa. *Manning.*

Makes a dense rosette of narrow, clear green foliage, and bears a constant succession of flowers from early spring to late frost. The flowers are deep rose-crimson, in dense globular heads, on long clean stems often 18 inches high. S. Europe.

— undulata. *Manning.*

Foliage very long, light green, undulate. Flowers pure white, in nodding heads on long, slender stems. 10 inches.

Arundinaria falcata. *Reasoner Bros., Oneco, Fla.*

India.

Asparagus, Donald's Elmira. *Johnson & Stokes, Philadelphia.*

A very large asparagus. The color is notably different from either the famous Barr's Philadelphia Mammoth or Palmetto, while the stalks are more tender and succulent. In whole crops five stalks will average a pound in weight. This is evidently the same as Vick's Mammoth. Vick's Sons write as follows:

"The seed we first obtained from A. D. Donald, of Elmira, N. Y. in 1890 and catalogued it then as "Mammoth," and have grown it every season since, and still catalogue it."

Asphodelus fistulosus. *Manning.*

Large, towering spikes of showy pure white flowers. S. Europe. 18 inches.

— ramosus *Manning.*

Upright, sword-like foliage and long, showy, naked-stemmed, dense spikes of pure white-veined brown flowers. 4 feet. S. Europe.

Aster, alpinus var. speciosus. *Manning.*

Flowers rich violet-purple.

Aster, Hallii. *Pilkington & Co., Oregon.*

A small species, with slender, graceful stems, covered in late summer with a profusion of white flowers. Native.

— Rose and White. *Dealers.*

This bears very double flowers, with symmetrically incurving petals, making the flower almost exactly spherical. The flowers are rose color and white, and very distinct among asters. It belongs to the ball group of asters.

— Sibiricus. *Manning.*

A dwarf globular plant, completely enveloped in showy lilac-rose flowers. 1 foot.

— White Comet. *Dealers.*

Pure white aster, the flowers being large—3 to 4 inches across—and very double, composed of long petals grotesquely twisted and intermingled, suggestive of a Japanese chrysanthemum; they are freely borne on bushy plants, growing about 15 inches high.

Astragalus Monspessalanicus. *Manning.*

Showy colored and deeply cut foliage. 1 foot. S. Europe.

Aubrietia deltoidea var. Leichtleinii. *Manning.*

Showy, bright pink flowers in profusion. Europe.

— Eyerii. *Manning.*

A species of dense-branched habit and with deep violet-purple flowers. 4 inches. Europe.

Azalea mollis × Sinensis. *Boskoop Holland Nursery Company.*

Flowers larger and in finer colors than the *A. mollis.*

Bean, Adzuki (*Phaseolus radiatus*).

The two following varieties were distributed to Kansas farmers in the spring of 1892 by the Kansas Experiment Station. They were introduced from Japan by Professor C. C. Georgeson. (See Bull. 32 Kan. Exp. Sta.) These are bush beans, growing about two feet tall. Excellent for table use.

Black-Podded Adzuki resembles the following, except that on ripening the pods turn a dark gray—not strictly black. No difference can be seen in the beans.

White-Podded Adzuki. Beans small, dull red, or reddish-brown, truncated at the ends, hilum white, long and narrow.

— Challenge Dwarf Black Wax. *D. M. Ferry & Co., Detroit, 1891.*

— Dreer's Dwarf Lima. *Dreer.*

Said to be Kumerle's Dwarf Lima, introduced in 1889, by J. M. Thorburn & Co.

— Early Yellow Six Weeks, Improved Round Pod. *D. M. Ferry & Co., Detroit.*

The old Yellow Kidney Six Weeks, while early and a desirable bean, has very thin pods which do not keep in condition for use long; this variety has medium length, almost cylindrical, very fleshy pods, which remain in condition for use a very long time. It is also fully a week earlier than ordinary Six Weeks.

Bean, Lightning Early Valentine. *J. A. Everitt Seed Co., Indianapolis.*

The pods are large, it is very productive, and when young entirely stringless.

— Mastiff Golden Pod Pole. *Johnson & Stokes.*

The pods are fleshy and attain a length of 10 to 14 inches. The dry beans are light yellow. Used either for string beans or as shell beans.

— Non-Rusting Golden Bush. *R. & J. Farquhar, Boston, 1890.*

A distinct bush bean, with white seeds marked with black around the eye. The pods are entirely free from spot or rust. It is a robust grower, very productive, very tender and of best flavor. (W. H. Grennell).

— Plymouth Rock Early Bush. *James J. H. Gregory, Marblehead, Mass.*

The earliest of market beans, having long pods fit for marketing before either the Early Six Weeks or Valentine.

— Snowflake Field Bean. *O. H. Alexander, Charlotte, Vt.*

Early and prolific and particularly valuable in its cooking qualities.

— Soy (*Soja* or *Glycine hispida*).

The following four varieties were introduced from Japan by Professor C. C. Georgeson, and distributed by the Kansas Experiment Station to Kansas farmers in the spring of 1892. A full account of them is given in Bulletin 32 of the Kansas Experiment Station.

Eda-mamé. Plants two to three feet high, erect, stocky, strong growers, dark green; leaflets two to three inches long; blossoms small, white, in axillary racemes; pods short, each containing but two, rarely three, beans, but crowded densely on the stalk; beans greenish yellow, oval, almost round, the size of large peas. The whole plant is thickly covered with short, coarse hair.

Kiyusuké Daidzu (Kiyusuké is the name of a person). Plant two and a-half to three and a-half feet high, a rank grower, with much dark green foliage; leaflets wrinkled or folded along the midrib, and narrower and more pointed than the others; flowers white, in short racemes; pods smaller than the last, containing two or sometimes three beans; the latter oval or nearly round, yellow; whole plant hairy.

Yamagata Cha-daidzu (tea-colored bean, from Yamagata). Plant four feet tall, a very rank grower, producing an abundance of foliage; leaves larger and coarser than any of the others, and stems more straggling and longer between the nodes. Blossoms in latter half of July, flowers deep violet; pods two to two and one-half inches long and three-fourths inch broad, containing two or often three beans; whole plant very hairy. The beans are oval in shape, deep greenish brown, the color of newly manufactured tea, and larger than any of the others here named.

Yellow Soy. Plant three to four feet high, erect, branches upright, in a close bunch. Pods very thick on the plant, each containing two or three seeds; whole plant, and especially the pods, thickly covered with short brown hair; beans yellow, slightly oval, the size of peas.

Bean, Wilkins' Pole Cranberry. *Gregory.*

A strain of the old-fashioned pole Tory or Cranberry bean. It takes to the pole exceptionally well; is a hearty, healthy, vigorous grower, nearly covering the pole with its numerous pods. Medium late.

— Willow-Leaf Lima. *Burpee.*

A Lima bean from the southern states, with narrow and long leaflets and white beans. Distributed for trial in 1891 by Burpee.

[Beans, 14 varieties.]

Beet, Columbia. *Burpee.*

The roots are turnip shape, with smooth, clean skin and deep blood-red flesh, of finest quality. It is ready to use very early, growing as quickly as the Egyptian, while it does not become coarse and stringy. Compared with such sorts as Edmand's and Eclipse beets, it has proved earlier than either and better in quality. Distributed for trial in 1891 by Burpee as "Sample No. 4."

— Early Othello Dark Blood Turnip. *J. A. Everitt Seed Co.*

Dark rich color, perfect form, sweet flavor; foliage, dark crimson.

— Ford's Perfected Half-Long. *Johnson & Stokes.*

Color several shades darker than the Philadelphia Perfection and Bastian Half-Long; very early, and uniform in size and shape. Originated with James Ford, Philadelphia.

— Jewell. *O. H. Alexander, Vt.*

Earlier than Egyptian, which it surpasses in quality. Round, smooth, blood-red. Originated with Alexander in 1885.

— Maule's Blood Turnip. *Wm. Henry Maule, Philadelphia.*

Nearly as early as Egyptian, but better in quality.

— New Surprise. *Johnson & Stokes.*

Very early, blood-red, fine-grained and tender, with a small top.

— Salzer's Best of All. *John A. Salzer Seed Co.*

Color outside is deep blood-red, inside layers of blood-red and light red alternately. When cooked it is a beautiful dark red throughout, fine grained and unsurpassed in quality. At the age of Eclipse it is larger, while it continues to grow until late in the fall, attaining a large size, and making a very good selling and eating beet for winter.

Begonia Baumanni. *F. J. Meech & Son, Charlevoix, Mich.*

This plant, which is one of the finest of the whole family, is found in abundance in the humid valleys of the northern Cordilleras. The size of the flower is large, the color very bright rose; the foliage large and fleshy and of a deep green color. The flowers have a very sweet and most agreeable perfume. The pistillate flowers are the larger, and are on the top of the stems, and in general there are two for each staminate. It was first introduced by Dr. Saac, of Cochabamba, in 1866.

— (Rex), Eclipse. *Dreer.*

Possesses the same characteristics as Countess Louise Erdody, but with rich, dark, velvety green foliage and a bronze-çolored edge and zone.

Begonia fulgens. *F. J. Meech & Son, Charlevoix, Mich.*

A tuberous species, with leaves of medium size, orbiculate, sea-green, and in early development covered with a rose-colored down that gives a velvety appearance. The main stalks are rather short, giving the plant the semblance of producing the flower-stems directly from the tuber, forming a low, compact plant with a large number of erect flower stalks. The peduncles are bronze-red, each bearing from five to ten flowers, erect and rising about eight inches above the leaves. The pistillate flowers are about three inches in diameter and have four petals of a brilliant raspberry red, much deeper on the borders. The staminate flowers are more numerous and higher colored, having five or six petals. During the morning the flowers give out a delicate perfume resembling the odor of the tea rose. This is an extremely floriferous plant of dwarfish, spreading habit, throwing up a succession of erect flower stems.

— geranioides. *F. J. Meech & Son, Charlevoix, Mich.*

A free winter-flowering species; leaves round, light green, woolly; flowers white.

— Mrs. F. A. Willard. *F. J. Meech & Son, Charlevoix, Mich.*

The flowers are large, round, with thick, heavy petals. The color is a light lemon ground, shaded to deep rose on edges of petals.

— Natalensis. *F. J. Meech & Son, Charlevoix, Mich.*

A much-branched plant, main stem being stiff and self-supporting, the side branches long, slender and drooping; leaves dark green, slightly shaded bronze; flowers small, produced by the hundred, of orange-buff color.

— (Tuberous), New Striped. *Dealers.*

A new striped class, with many handsome and unique combinations of colors, such as yellow, orange, scarlet, crimson, etc., all of which are more or less striped and flecked with some other color.

— Vernon. *Dealers.*

The color of the flower is a waxy blood-scarlet, and, being borne in immense quantities, they make an exceedingly brilliant effect. The foliage is at first green, but when the plants are about two months old the leaves begin to turn red on the margins, and gradually the whole leaf and stem are suffused.

Bellis. See Daisy.

Biota, aurea conspicua. *Berckmans, Ga.*

Growth more erect than the Aurea; foliage intense gold, some branches being of a solid metallic tint, others suffused with green.

— aurea nana. *Berckmans, Ga.*

Of very dwarf and compact habit; a perfect gem for small gardens or cemetery lots. Originated with Berckmans.

Blackberry, Eldorado. *E. M. Buechly, Greenville, Ohio.*

— Governor. *John A. Salzer, La Crosse, Wis., 1890.*

Box Elder. See Acer Negundo.

Brodiæa Hendersoni. *Pilkington & Co., Oregon.*

The flowers are a beautiful yellow, striped with blue. Native.

Brunella Pyrenaica. *Manning.*

A dwarf plant of tufted nature, with large and showy spikes of deep purple flowers. 8 inches. Europe.

Brussels Sprouts, Dalkeith. *Henderson.*

More dwarf than the common sorts, producing larger buttons.

Cabbage, Acme Flat Dutch. *Burpee.*

It is distinct from the Premium Flat Dutch Cabbage, and differs from all other strains of late Flat Dutch in that it is more quick growing (earlier to mature), the stumps being very short. A sure header; the heads are of good, marketable size, hard, solid and fine-grained.

— Alaska. *O. H. Alexander, Vt.*

A midsummer variety, with large heads and of extra quality.

— Carolina Hard Header. *Johnson & Stokes.*

Originated in Buncombe county, North Carolina, where it has had a great local reputation for a few years past, the seed frequently being sold by local gardeners. It grows good sized flat and very hard heads, averaging 15 to 25 pounds each, very short stock or stem, and darker green in color than any other cabbage of its class; earlier than the best strains of Late Flat Dutch.

— Currie's Early Market. *Currie Bros., Milwaukee.*

Earlier than Wakefield, with a firmer head and few outside leaves.

— Eclipse. *Currie Bros., Milwaukee, 1891.*

Two weeks earlier than Henderson's Early Summer, and considerably larger.

— Faultless. *Iowa Seed Co.*

It is of the Early Summer type, but far more regular and uniform in time of maturing. It is a rapid grower, having produced heads for market in forty days after the setting of the plants. It has a vigorous constitution, does not drop its leaves quickly, and is a good keeper. By sowing the seed July 1, perfectly solid heads will be formed by the time of trenching for winter. Originated with C. L. Allen, Floral Park, N. Y. (Long Island).

— Perfection Red. *Farquhar, Boston, 1891.*

The heads are large, very solid, and of beautiful dark color. The great advantage in this cabbage is its dwarf habit of growth and sureness to head solid and firm. Originated with S. P. Buxton, Peabody, Mass.

— (Savoy) Hard Heading. *Johnson & Stokes.*

The heads are large, uniform, solid and hard, of a deep green color, very curly and sure to head; keeps well and retains its color until very late in the season; exceptionally fine quality, possessing the rich, sweet flavor of the cauliflower when cooked.

Calceolaria, Vesuvius. *Henderson.*

Intense deep blood-scarlet. The blossoms are of great size, perfectly formed and produced in large compact trusses. It comes true from seed.

California Yellow Bells (Emmenanthe penduliflora). *Henderson.*

A novelty from California. It is an annual, forming bushy plants, 9 to 12 inches high, each branch loaded with broadly bell-shaped, pendulous, unwithering flowers about half an inch long, of creamy yellow color. The general effect of a branch is very suggestive of a long spike of Lily-of-the-Valley with large yellow bells; the foliage, however, is pinnatifid.

Supplied to dealers by Henderson. Sometimes sold as California Golden Bells.

Calla, Dwarf Everblooming. *John Lewis Childs, Floral Park, N. Y.*

A dwarf white-flowered variety, with a continuous habit of bloom.

— Gem. *Henderson.*

The great value of this over the common lily lies in its dwarf habit and freedom of bloom. It rarely exceeds 18 inches in height, and blooms most abundantly. The flowers are no more than half the size of the common variety.

Calliopsis, Golden King. *James Vick's Sons, Rochester.*

Dwarf, 10 to 12 inches, with heads one half to two inches in diameter, the center of which is rich maroon and the border bright yellow.

Calochortus Tolmiei. *Pringle & Horsford, 1884.*

A little species 8 to 10 inches high, with several white or light purple flowers in spring. A long time in bloom. Native. Offered in 1892 by Pilkington & Co.

Camassia Howellii. *Pilkington & Co., Oregon.*

A curious plant. The bright blue flowers open only for a few hours in the afternoon. Native.

— Leichtlinii var. alba. *Pilkington & Co., Oregon.*

A white-flowered camas. Native.

Campanula allariæfolia. *Manning.*

Large creamy white, bell-shaped, pendulous flowers. 2½ feet.

— Hohenackerii. *Manning.*

Clear blue pendulous flowers in June. 2 feet.

Candytuft, Dreer's Mammoth White. *Dreer.*

Pure white flowers in trusses twice the size of the old varieties.

Canna, Alphonse Bouvier. *Dealers.*

As good in its color of soft, bright cardinal red as is Mad. Crozy among the orange scarlets; the truss is enormous, composed of quantities of flowers; spikes freely produced; produces a mass of brilliant red. Raised by Crozy, in France.

— Baronne de Renowardy. *Dreer.*

Flowers of fair size, of a rosy salmon overlaid with scarlet; foliage deep green edged with purple. 3½ feet.

— Capitaine P. de Suzzoni. *Dealers.*

Flowers large and composed of overlapping petals of great size; color clear yellow, dotted with orange yellow; one of the finest of the gladiolus-flowered varietes in yellow. Raised in France, by Crozy.

Canna, Duchesse de Mortemarte. *Dealers.*

A vigorous grower, with large leaves, throwing up numerous flower stalks; flowers large and round, composed of large round petals; color yellow, very bright, lightly dotted carmine. Raised by Crozy, in France.

— Henry A. Dreer. *Dreer.*

Flowers large, of a very rich crimson; foliage bronzy purple, entirely distinct. 4 feet.

— J. Thomayer. *Dreer.*

Flowers of very large size, produced in large spikes, of a most intensely rich orange scarlet; foliage of a rich bronzy purple. 4 feet.

— Miss Sarah Hill. *Dealers.*

Height about 30 inches; large, nicely cupped flowers; color deep, rich carmine; large, full spike. One of the best of the soft red shades. Crozy.

— P. Marquant. *Dreer.*

An excellent variety, with very large flowers of a bright salmon scarlet, passing to rosy carmine; foliage dark green. 3 feet.

— Statutaire Fulconis. *Dealers.*

Height 3 feet; large bright red flower, in compact spikes of great beauty. A free grower and very profuse in bloom. Crozy.

— Ventura. *Mrs. Theodosia B. Shepherd, Ventura-on-the Sea, California.*

Flowers five inches in diameter, self-colored, a blending of scarlet and carmine, not crowded, but standing well out from the stem, and drooping in the most graceful manner. The petals are from one and one-quarter to one and one-half inches across by three inches long; foliage rich green, with a dark line on the edge. It is a persistent bloomer, every little shoot having large, plumy blossoms. Height, 3½ to 4 feet.

Cardamine gemmata (Dentaria gemmata). *Pilkington & Co., Oregon.*

A dwarf species, with showy purple flowers. Native.

Carnation. [Several varieties of carnations have been admitted to this list solely upon the authority of the catalogue prepared by the *American Florist*, January 19, 1893, although I have taken care to omit those which are improperly credited to 1892, so far as I know them. Of some of these entries I do not even know the introducer. All entries made from that catalogue are indicated by (Am. Fl.).—*L. H. B.*]

— Adelaide. *S. Lenton, Piru City, Cal.*

Delicate satiny pink; very large and double. (Am. Fl.)

— Alessandro.

Flesh color, very heavily marked with deep crimson; strong grower. (Am. Fl.)

Carnation, Annie Wheeler.

Pink, tinged with salmon. (Am. Fl.)

— Attraction. *E. G. Hill & Co., Richmond, Ind.*

Stem longer than the average, and bearing a flower of a new shade, which catches the eye at once; we think it best described by the words rosy scarlet; it is at once soft and brilliant; flower of good size, borne in the greatest profusion, and deeply fringed. Raised by Fred. Dorner.

— Avalanch. *John Briggs, Albany, Oregon.*

Pure white, imbricated, good form, erect; calyx perfect.

— Avalanche. *S. Lenton, Cal.*

Dark rich pink; very fragrant. (Am. Fl)

— Ben Hur. *E. G. Hill & Co.*

Grace Wilder pink, of even, bright shade; indescribably beautiful; flower large, of good substance and elegant, substantial form, nicely fringed; stems long and stiff, very free. Raised by Fred. Dorner, Lafayette, Ind.

— Buster. *S. Lenton, Cal.*

Dark red flowers of very large size. (Am. Fl.)

— C. J. Haentel.

Crimson, free bloomer; stems rigid. (Am. Fl.)

— Columbia. *John Briggs, Albany, Oregon.*

Color a bright salmon, with a transparent lilac shade; plant of strong habit; a profuse bloomer; calyx perfect.

— Corona.

Buff, marked with carmine. (Am. Fl.)

— Coronet.

Crimson; flower medium; stems long. (Am. Fl.)

— Dorinda. *R. T. Lombard, Wayland, Mass.*

A little darker than Grace Wilder; large. Raised by Fewkes.

— Emily Pierson. *A. N. Pierson.*

Scarlet, much like Garfield.

— Evangeline. *S. Lenton, Cal.*

White, striped with red; very fragrant. (Am. Fl.)

— Exquisite.

White, with pencilings of pink. (Am. Fl.)

— Goldsmith. *S. Lenton, Cal.*

Rich yellow, striped red on the edges; large; stems stout and long. (Am. Fl.)

— Ideal. *S. Lenton, Cal.*

White, petals red-edged. (Am. Fl.)

— Indiana. *E. G. Hill & Co.*

Flower very large and fringed; an upright grower, perfectly healthy and very free in bloom; the ground color of the flower is creamy white, very heavily flaked and penciled in carmine pink. Form of flower extra good. Raised by Fred. Dorner.

Carnation, John Thorpe. *E. G. Hill & Co.*

Pink. Raised by Dorner. (Am. Fl.)

— Lavinia. *S. Lenton, Cal.*

Scarlet, white spotted, large, very double, fragrant; stems long. (Am. Fl.)

— Leon Gambetta. *C. J. Haettel, Redondo Beach, Cal.*

Bright scarlet, very double; perpetual bloomer. (Am. Fl.)

— Mrs. Lonsdale. *C. J. Haettel, Cal.*

Deep pink; dwarf. From Hinzie's White, blended with a light shade.

— Lucy May.

Pink; robust. (Am. Fl.)

— Majesty. *S. Lenton, Cal.*

Rich dark pink, very double and very fragrant. (Am. Fl)

— Marvel. *S. Lenton, Cal.*

Dark pink, shaded creamy white or pale yellow; very fragrant; stems long. (Am. Fl.)

— Mrs. Hitt. *E. G. Hill & Co.*

An improvement on the Tidal Wave, being of a brighter shade, and producing flowers freely. The stem is 15 to 18 inches long, rather slender, but stiff and perfectly erect; flowers of large size and fine form. Raised by Fred. Dorner.

— Ocean Spray.

White. (Am. Fl.)

— Oona. *S. Lenton, Cal.*

Dark pink, very large, fragrant. (Am. Fl.)

— Orange Blossom. *E. B. Jennings, Southport, Conn.*

Much like Dawn; white, shading to rose center, fringed; fragrant.

— Paradise. *S. Lenton, Cal.*

Bright red, fragrant, borne on long, stout stems. (Am. Fl.)

— Piru. *S. Lenton, Piru City, Cal.*

White; plant strong but inclined to be dwarf, the stems long and stout; very fragant. (Am. Fl.)

— Romance. *S. Lenton, Cal.*

Bright red, very large and fragrant. (Am. Fl.)

— Ramona. *S. Lenton, Cal.*

Dark red, striped with white; strong grower, with long stems; very fragrant. (Am. Fl)

— Snowdrift.

White. (Am. Fl.)

— Sunflower. *S. Lenton, Cal.*

Yellow, striped with red; dwarf full bloomer. (Am. Fl.)

— Vulcan.

Crimson. (Am. Fl.)

— White Cap. *S. Lenton, Cal.*

White; large, very double and fragrant. (Am. Fl.)

Carnation, White Dove. *E. G. Hill & Co.*

Pure glistening white; flower very large and deeply notched, of good form, petals being very large and of heavy texture; stem quite stiff and very long; fragrant; very free in bloom, and in splendid, robust health. Raised by Fred. Dorner.

— Wide Awake. *S. Lenton, Cal.*

Dark red. (Am. Fl.)

[Carnation, 40 varieties.]

Castanopsis chrysophylla. *Pilkinton & Co., Oregon.*

A large shrub or small evergreen tree. Thomas Meehan says that he has been "buying and selling Castanopsis chrysophylla for years past," but it does not appear in his catalogue. Native.

Cauliflower, Salzer's Earliest Surehead. *Salzer.*

Surpasses in earliness the Snowball. Whether for forcing or open ground, planted early or late, it is the surest header of all. Dwarf and compact in growth, like the Snowball.

— Breck's White Bouquet. *Breck, 1891.*

A dwarf, early cauliflower, adapted either to field culture or forcing.

— World-Beater. *Francis Brill, Riverhead, N. Y. (Long Island).*

Ceanothus atrocœruleus var. purpureus. *Berckmans, Ga.*

Purple foliage in spring, flowers blue. Imported from France.

Celeriac, Paris Market. *Henderson.*

Tops half the usual size. The roots are of good size, round and smooth as an apple. It is at least ten days earlier than any other variety.

Celery, Princeton's Favorite. *F. W. Poscharsky & Son, Princeton, Ill.*

A half dwarf celery; strong grower, from 15 to 18 inches high; dark green in color, and not stringy. When blanched it is snow-white and very crisp, with a sweet flavor; one of the best keepers.

Centaurea. See also Cornflower.

— Margaritæ. *Henderson.*

The plant grows about one and one-half feet high, bearing freely large pure white flowers of delightful fragrance. Although this variety is a biennial, it will flower freely the same season, if the seed is sown reasonably early.

Centrosema grandiflora. *A. Blanc, and by him supplied to many dealers.*

A hardy perennial vine, which blooms early in June from seed sown in April, and bears in the greatest profusion inverted, pea-shaped flowers from one and one-half to two and one-half inches in diameter, and ranging in color from a rosy violet to a reddish purple, with a broad feathered white marking through the center. The large buds and the back of the flowers are pure white, making it appear as if one plant bore many different colored flowers at one time. Occasional plants bear pure white flowers, while others are broadly margined with a white feathering. The flowers are produced in the greatest abundance, sometimes six to eight in a single cluster. Blooming stems placed in water remain fresh for many days. It is well adapted for every garden purpose, and especially as a climber, running six to eight feet in a season.

Cephalaria Tartarica. *Manning.*

Flowers creamy white, in showy, flat heads; leaves long and pinnate. 5 feet. Siberia.

Cherry, Abbess. *Stark Bros., and others.*

A sweet Duke.

— Improved Dwarf Rocky Mountain. *Chas. E. Pennock, Fort Collins, Col.*

From mountains of northern Colorado. Fruit somewhat larger than Morello, oblong in shape; ripens in August flavor when fully ripe sweet and good; black. (See Bul. 38, Cornell Exp. Sta. 60)

Chrysanthemum, Abbie Mendenhall. *E. G. Hill & Co., Richmond, Ind.*

Flower of pale canary yellow, of immense size; other petals reflexed, center petals incurving; foliage heavy and beautiful; a fine grower; stems stiff.

— Ada H. LeRoy. *T. H. Spaulding, Orange, N. J.*

Petals broad and cupped full to the center; color deep rose pink, extra large flower. Awarded certificate at Philadelphia.

— Ada McVicker. *Pitcher & Manda.*

A plant of strong habit; creamy white flowers, with broad, thick, reflex petals. Reflexed section.

— Alabaster. *Pitcher & Manda.*

Flower large, borne upright on a stout stem; white, with a yellow center, the petals incurving. Hairy section.

— A. Ladenburg. *T. H. Spaulding.*

A full and extremely double Japanese variety of immense size, having been grown 10 inches across; style and shape of Mrs. I. Clark, except in color, which is a clear, delicate rose pink, magnificent for exhibition specimens. Awarded certificate at Philadelphia and Madison Square Garden.

— Amy Carey. *T. H. Spaulding.*

Rich clear, light brown.

— Baby Cleveland. *Pitcher & Manda.*

Flower semi-globular, full and double, of medium size, with broad petals; color lilac pink. Reflexed section.

— Beauté Toulousaine. *Dealers.*

Bright velvety red, almost scarlet; pointed petals; very large and brilliant. From France.

— Belle of Orange. *T. H Spaulding.*

Brightest and richest yellow.

— Boonton. *Pitcher & Manda.*

Large, rose-pink flower, with narrow pointed petals; single.

Chrysanthemum, Bronze October Beauty. *J. Forsterman.*

A sport of October Beauty, of a rich bronze color.

— Burlington. *Pitcher & Manda.*

Flower pure white, with long tubular petals; single.

— Camden. *Pitcher & Manda.*

Large lilac-pink flower, with tubular, spatulate petals; single.

— C. B. Whitnall. *Hill.*

Outer petals recurving, forming a perfect globe when well grown; color soft, velvety maroon; reverse a shade lighter. Certificate at Madison Square. Chinese section.

— C. F. Whiting, Jr. *T. H. Spaulding.*

Rich chestnut, old-gold and bronze.

— Chastity. *Pitcher & Manda.*

Large, full flower; white, with a yellow center; petals strongly incurved. Hairy section.

— Chicago. *T. H. Spaulding.*

Delicate shell-pink, changing to white.

— Christopher Columbus. *T. H. Spaulding.*

Deep, dark crimson.

— Clara Bertermann. *Vaughan.*

Old gold. Sport of John Collins; opens at first a bronze, and changes to a beautiful golden yellow. Raised by Bertermann. Japanese type.

— Colonel H. M. Boies. *Pitcher & Manda.*

Vigorous in habit; very large, rose-pink flowers, with twisted petals, veined with a lighter shade. Reflexed section.

— Colonel Wm. B. Smith. *T. H. Spaulding.*

An immense double, high-built flower, petals very broad and large, forming a solid mass of richest bright golden bronze. Awarded certificate at Madison Square Garden; also the Bird cup. Raised by Robt. Craig.

— Columbian. *T. H. Spaulding.*

Bright scarlet in color.

— Cornelia Beckwith. *T. H. Spaulding.*

Large; clear snow white.

— David Rose. *Henderson.*

Rosy claret, edged with silvery white; large and handsome. Japanese section.

— Dove. *Pitcher & Manda.*

Flower pure white; central petals short, erect; ray petals numerous, partly incurving. Anemone section.

— Dr. Covert. *Hill.*

A large golden yellow, deep and bright, heavy in texture, very double and incurving; stems strong. An improved Mrs. W. K. Harris in size and color.

— Dr. H. A. Mandeville. *Pitcher & Manda.*

Bright chrome yellow, petals very long and twisted. Incurved section.

Chrysanthemum, Duck. *Pitcher & Manda.*

Flower medium size, white, the ray petals in several rows. Anemone section

— E. A. Wood. *John Thorpe & Son.*

Incurved and finely-shaped flower ; velvety crimson, reflex of petals shaded gold.

— Edward Hatch. *Hill.*

Flowers of immense size, almost spherical ; outer petals recurving slightly ; quite double, and carried on a good stem. The color is a soft lemon, suffused with pink. Raised by Eliza Wood.

— Egret. *Pitcher & Manda.*

Flower of medium size, pure white ; central petals strap-shaped, standing upright ; ray petals in a single row, reflexed. Anemone section.

— Ella May. *Henderson.*

Primrose yellow, apricot center ; extra large and fine.

— Elsinor. *T. H. Spaulding.*

Large; clear, bright orange.

— Emma Hitzeroth. *T. H. Spaulding.*

An extra large flower ; petals broad and peculiarly arranged, completely filling the center ; bright lemon yellow ; novel form. Awarded at Madison Square Garden the Winslow cup, also certificate. Raised by Wm. Craig

— Ethel Paul. *T. H. Spaulding.*

A large snow-white flower.

— Eva Hoyt. *T. H. Spaulding.*

An immense double Japanese bloom of clearest and brighest yellow ; a solid ball, with full, high-built center. Raised by Wm. K. Harris.

— Evening Glow. *Henderson.*

Deep yellow in the center, with rich bronze-red shadings toward the ends of each petal, very like the coloring of a brilliant sunset.

— Exquisite. *Dealers.*

A seedling from Mrs. Fottler, identical in color, but an improvement in size of flower, freedom of growth and stiffness of stem. The petals are upright, and show the bright pink shadings at their best.

— Fair Maid of Perth. *T. H. Spaulding.*

A round ball of purest white, tipped rose.

— Faultless. *Henderson.*

Deep golden yellow, extra large and full. Blooms have measured over 11 inches across.

— Frances Tarbox. *Pitcher & Manda.*

Large flower, with full center ; petals broad, convex, silvery pink, with a narrow line of pale lilac at the extreme edge. Reflexed section.

Chrysanthemum, Fred. Dorner. *Hill.*

This variety opens with half its petals very regularly incurved, the outer petals reflexed; as it matures, the entire bloom takes on a pyramidal form of irregularly arranged petals of creamy white color, delicately penciled in pink; flower of good substance and large size; stem strong. Awarded first premium at the Orange, N. J., show.

— George Savage. *Pitcher & Manda.*

Pure white, with broad, strongly incurved petals, making an almost solid ball. Incurved section.

— George W. Childs. *John Thorpe & Son.*

The flowers are of massive size, reflexed, with broad, stiff petals; color deep, rich, velvety crimson, with no shade of brown or chestnut. Flowers borne on strong, stiff stems. The foliage resembles Cullingfordii, but is much heavier and darker. A fine, strong, clear grower. It was awarded the J. R. Pitcher gold medal at Orange, N. J., for the best seedling, 1890; the silver medal by Pennsylvania Horticultural Society; the Medal of Excellence, American Institute, 1890; Certificate of Merit at Chicago, 1891. It was exhibited at Indianapolis over eight inches in diameter.

— Goguac. *N. Smith & Son, Adrian, Mich.*

With Mrs. Irving Clark, from which it is a sport, this variety is identical in every respect except color, which is white. Received Certificate of Merit at Indianapolis.

— Golden Fleece. *J. W. Manning, Reading, Mass.*

A hardy chrysanthemum, blooming early enough to give a good effect before hard frost, and bearing handsome, deep-yellow, perfectly double, fragrant flowers about two inches in diameter.

— Goldfinch. *Henderson.*

Deep, intense crimson on the upper surface, the reverse being a light bronze.

— Hackensack. *Pitcher & Manda.*

Very large flower; color pale pink; petals decidedly spoon-shaped. Single.

— Harry Balsley. *N. Smith & Son, Adrian, Mich.*

A pearl-pink, shading to mermet pink. Flowers double, semi-globular, with erect petals. Received Certificate of Merit at Indianapolis.

— Harry May. *Pitcher & Manda.*

Flower very large and double; color deep old gold, occasionally veined red; petals broad and thick. Incurved section.

— Hazel Gallagher. *John Thorpe & Son.*

Large incurving flowers; bright rose-pink, reflex of petals silvery pink The flowers form a complete ball; stiff stems; good grower.

— Heron. *Pitcher & Manda.*

Flower very large, rose-pink; ray petals in several rows. Anemone section.

Chrysanthemum, H. F. Spaulding. *T. H. Spaulding.*

A Japanese variety, of novel shape and effect Color rich apricot-yellow, shading to rose, center petals clear yellow; bloom solid and double, high-built and of largest size; habit strong and robust. Awarded the Ladenburg cup at Madison Square Garden, also certificate of merit.

— Incandescent. *Dealers.*

— Indian Chief. *Henderson.*

Color vivid, strong crimson; flower large, loosely incurved and decidedly Japanese in form.

— J. N. May. *T. H. Spaulding.*

Extra large, deep, ox-blood red, color of Mrs. J. T. Emlin, but much larger and more double; reverse of petals shaded copper-bronze; full and solid bloom.

— John Bertermann. *Hill.*

Strong, clean-growing variety, with large, perfectly double flowers of pure white, shading to a cream center; outer petals horizontal, center petals shorter and nearly upright.

— John F. Miller. *Dealers.*

A soft, pleasing shade of pink; flower of good size, double and early. Graham. A fine grower.

— John H. Taylor. *John Thorpe & Son.*

Large reflexed, plumed flowers; ground of flower white, flaked and mottled with a shade of pink; strong stems, and growth of the best.

— Joseph H. White. *Hill.*

A large white variety, with upright dahlia-like petals, forming a nicely rounded flower of great substance and purity of color. Certificates at New York and Boston.

— J. Schuyler Matthews. *John Thorpe & Son.*

Style of C. Orchard; finely incurved, showing no center; red-bronze, reflex of petals gold; strong stems; good grower

— J. S. Fassett. *T. H. Spaulding.*

Lilac-crimson, showing pink. Japanese.

— Julius Roehrs. *Henderson.*

Rich violet-rose, reverse silvery pink; a unique and charming contrast. Flowers incurved, of largest size. Awarded certificate at Philadelphia

— Ki-Ku. *John Thorpe & Son.*

The lower petals are broad and flat; color deep pink; center petals silvery pink, long and tubular, which gives the flower a peculiar shape; large flowers; strong stem. One of the most peculiar chrysanthemums in cultivation.

— King's Daughter. *Vaughan.*

Pure snow white, very long, drooping outer petals, center petals irregularly incurved. Imported. Japanese section.

Chrysanthemum, Leila. *Dreer.*

A novel variety, on account of the peculiar twisting and overlapping of the petals, which gives the flower a most grotesque but at the same time graceful appearance.

— Lillian Russell. *T. H. Spaulding.*

A broad-petaled, clear silvery pink, incurving and forming an immense round ball; an early-flowering variety; one of the collection winning the Astor cup at Madison Square Garden.

— Logan. *Dreer.*

A large incurved variety; flowers white, striped with rose, reverse of petals silvery pink; one of the six varieties that were awarded the Spaulding prize at the Philadelphia Exhibition for the best six new seedlings of 1891.

— Looking Backward. *T. H. Spaulding.*

Deep, rich purple.

— Madame Bie (or, Etoile de la Pape). *Dealers.*

The flowers are of the largest size, with hardly an exception. White, slightly tinted cream; perfectly double, quite as deep as wide; petals of heavy texture. Introduced from Japan through France, where it has made a sensation.

— Madame Forgeot. *Dealers.*

Of the largest size, a three-quarter globe, very regular in form; petals upright and tubular for half their length. White, very lightly tinted with pale heliotrope. From France.

— Madame L. Vouga. *Dealers.*

A pink flower of the most regular Chinese form; very double; petals of beautiful shell shape, and of good size for this class. Imported.

— Majesty. *Henderson.*

Deep, glowing red, similar to Cullingfordii, but larger and finer, the color being more intense than in that fine variety.

— Mamie Craig. *T. H. Spaulding.*

White, with beautiful shading of pink.

— Marble. *Pitcher & Manda.*

Flower pure white, of medium size; the strongly incurving petals are evenly imbricated, giving the flower a compact and solid appearance. Hairy section.

— Marguerite Graham. *Dreer.*

Pure white, incurved, of most perfect form, flowers very erect on stout stems, when opening a pale lemon, changing rapidly to pure white. Awarded a certificate of merit, and one of six which took the Spaulding prize at Philadelphia.

— Marguerite Jeffords. *Hill.*

A large ball of fine amber color; one of the notable varieties of the year. Winner of the Whilldin prize at Philadelphia. Raised by Surman.

Chrysanthemum, Maud Dean. *Hill.*

An extra large-flowered variety; petals broad and incurving; perfectly double, and of good substance; color, soft pink. Silver medal at Philadelphia, and also certificate at Indianapolis and at Madison Square. Raised by Robt. Craig.

— Miss Annie Manda. *Pitcher & Manda.*

Flower high and compact, perfectly double, incurved, of the purest white. The petals are covered with long, hair-like growths. Hairy section.

— Miss Bertha N. Robison. *Pitcher & Manda.*

Flower rose-pink, with red center; very early, of large size and good substance. Incurved section.

— Miss Helyett. *John Thorpe & Son.*

Flowers a very pleasing shade of violet-amaranth, slightly incurving; reverse of petals shaded lighter, after the style of Mrs. E. W. Clarke.

— Miss M. Colgate. *Pitcher & Manda.*

Flowers perfectly hemispherical, pure white; petals broad and incurved. Incurved section.

— Mitford. *Pitcher & Manda.*

Flower pure white, with long, narrow petals. Single.

— Mohican. *Pitcher & Manda.*

Flower large, of a deep mahogany color; petals incurved, covering the center well when fully expanded. Plant of vigorous growth and habit, and the flower of a distinct color. Incurved section.

— Mr. A. G. Ramsey. *Pitcher & Manda.*

Flower of medium size, full center, petals broad; upper surface of the expanded limb deep Indian red, yellowish at the tip. under surface yellowish, veined with lines of red. Reflexed section.

— Mr. D. S. Brown. *Pitcher & Manda.*

Flower medium size, semi-double; of a clear canary yellow color when first opening, but changing to cream color as the petals expand. Incurved section.

— Mr. H. Ballantine. *Pitcher & Manda.*

Flower rather flat, showing the center somewhat, of a beautiful old gold or bronzy color. Hairy section.

— Mr. Hicks Arnold. *Pitcher & Manda.*

A strong growing variety, bearing large, full double flowers of an old-gold color. Incurved section.

— Mrs. A. J. Drexel. *Hill.*

Large-flowering, early variety; color, crimson-lake; form rounded into a half globe. Certificate at New York. Raised by Robt. Craig.

— Mrs. C. D. Avery. *N. Smith & Son, Adrian, Mich.*

Petals long, convexed and twisted at maturity; color a new shade, pure dandelion yellow, darker than Lincoln or Widener, without any bronze or red shadings; perfectly double; strong stems, clothed with very glossy, dark green foliage. Japanese section.

Chrysanthemum, Mrs. Dr. H. A. Mandeville. *Pitcher & Manda.*

Large flower, perfectly spherical, with broad incurved petals of a terra-cotta yellow. Plant of vigorous habit. Incurved section.

— Mrs. E. D. Adams. *Pitcher & Manda.*

Very large; color pure white. Reflexed section.

— Mrs. E. D. Church. *Pitcher & Manda.*

One of the earliest varieties in cultivation; flowers fully double, medium size, borne on stout stems; pink in various shades. Reflexed section.

— Mrs. F. Schuchardt. *Henderson.*

Center creamy white, with ends of petals tinted delicate rose. Japanese section.

— Mrs. Georgie Cole. *Vaughan.*

Garnet purple, reverse of petals lighter; large double flowers. Imported. Japanese section.

— Mrs. Governor Fifer. *N. Smith & Son, Adrian, Mich.*

Flowers flat, with pure white broad petals; center incurving when fully matured; double at all stages of development; stout stem, with fine foliage. Was shown at Indianapolis eight inches in diameter, where it won the $25 prize as best white seedling, and also received certificate of merit. Japanese.

— Mrs. H. B. Hall. *Dreer.*

A shade of pearl-pink; flowers very large, of perfect shape; petals narrow.

— Mrs. Herbert Leon. *Pitcher & Manda.*

Flower very large, full, double; pink, with broad reflexed petals. An early variety. Reflexed section.

— Mrs. J. D. Eisele. *Dreer.*

An early-flowering variety, opening its flowers almost as early as Gloriosum; in color it is a rich orange, shaded with crimson; flowers large and of good substance; one of the six that were awarded the Spaulding prize at the Philadelphia Exhibition.

— Mrs. Jerome Jones. *Vaughan.*

Pure white, incurved, high round flower; large and fine form. Mr. Gane. Japanese section.

— Mrs. J. Forsterman. *Henderson.*

An extra large snowy white variety of the Japanese incurved type.

— Mrs. J. Hood Wright, *Pitcher & Manda.*

Flower large, full double, of the purest white, with reflexed, twisted petals. A strong grower; early. Reflexed section.

— Mrs. John Eyerman. *Pitcher & Manda.*

Flower semi-globular, full double; petals decidedly spoon-shaped, the lower half being tubular, while the limb is broadly expanded; upper surface rose-pink, lower pale lilac. Incurved section.

— Mrs. J. L. Kearney. *T. H. Spaulding.*

Pearl-white, shading to peach-pink.

Chrysanthemum, Mrs. J. W. Morrissey. *T. H. Spaulding.*

A mammoth flower, with full double center, exhibited 12 inches across; color silvery pink, inner surface of petals bright rose. Awarded certificate at Philadelphia.

— Mrs. L. C. Madeira. *Hill.*

A perfect compact globe of bright orange-color; petals upright like unopened pointed quills; stems stiff; flowers large and of the heaviest substance. Silver medal at Philadelphia and certificate at Indianapolis. Raised by Surman.

— Mrs. Maria Simpson. *Hill.*

A perfect Japanese of the largest size; petals broad and incurving; shows no center; fine chrome yellow. Silver medal at Philadelphia; certificate at Indianapolis.

— Mrs. M. F. Gallagher. *Pitcher & Manda.*

Large, semi-globular bloom, with full center; deep maroon crimson above, paler below. Reflexed section.

— Mrs. R. Benner. *Pitcher & Manda.*

Flower medium size, of a deep lilac-pink color, with a red center. A late variety. Reflexed section

— Mrs. R. C. Ogden. *Dreer.*

An immense flower of a beautiful bright pink, of good substance and form. Awarded a silver medal in 1890, certificate of merit in 1891, and one of the six best new seedlings awarded the Spaulding prize in Philadelphia.

— Mrs. Robt. Craig. *Hill.*

One of the best white varieties, in form the purest spherical Chinese; in size and texture of petals like the finest Japanese; color snow white. Silver medal at Philadelphia, certificates at New York and Indianapolis. Raised by Robt. Craig.

— Mrs. T. F. Mercer. *Pitcher & Manda.*

Flower large, blush white; petals broad, incurved, the inner regularly imbricated, the outer more spreading. Late flowering. Incurved section.

— Mrs. W. F. Dreer. *Dreer.*

Flowers large, reflexed, very double, the outer petals dark brown, shading to light in the center; awarded a certificate of merit at the Madison Square Garden Exhibition.

— Mrs. W. H. Phipps. *John Thorpe & Son.*

After style of Domination, but later; pure white, large massive flowers; strong, stiff stems; fine grower. Winner of the Mrs. Phipps silver cup at Pittsburgh, November, 1891.

— Mrs. W. S. Kimball. *Pitcher & Manda.*

Full double, pale blush or creamy white, with a yellowish center. Reflexed section.

— Murillo. *Dealers.*

A striking red and gold Chrysanthemum; the upper side is velvety scarlet-crimson, the lining, bright gold; form a flat incurve, showing the red color to the greatest advantage; good grower and free in bloom. From France.

Chrysanthemum, Nacre. *Pitcher & Manda.*

Flower large, almost double, of a fine clear silvery pink color; petals incurved. Hairy section.

— Newark. *Pitcher & Manda.*

Large pure white flower, with very broad and thick round petals. Single.

— Newton. *Pitcher & Manda.*

A free grower, with large flowers of rose-pink color. Single.

— Olga. *Vaughan.*

A well-built flower, on stiff stem, full and double to the center; color soft rose, with magenta shadings. Mr. Rieman. Japanese section.

— Oliver Wendell Holmes. *John Thorpe & Son.*

Slightly incurved; light mahogany red, reverse of petals light yellow; flowers rather flat; long, stiff stems; good grower.

— O. P. Bassett. *Hill.*

Might be called a giant Cullingfordii; petals broad and heavy, the general build being magnificent. Premium for best red variety at Indianapolis; certificates at New York and Philadelphia.

— Orange. *Pitcher & Manda.*

Flower bright golden yellow, with large and broad petals. Single.

— O. S. Hubbell. *T. H. Spaulding.*

Bright lemon yellow. Anemone section.

— Patrick Barry. *Henderson.*

A yellow incurved variety of the Ostrich Plume class. It came from Japan. Said to be the same as W. A. Manda.

— Pawnee. *Pitcher & Manda.*

Flower very large, Indian red, with yellow shadings; massive, incurved. A late flowering variety.

— Pearl-Shell. *Pitcher & Manda.*

Flower very large, semi-double, of a beautiful pale pink. A free-growing plant. Hairy section.

— Peerless. *Pitcher & Manda.*

Flower of loose and graceful texture; white, with light yellow center. A good grower. Hairy section.

— Pigeon. *Pitcher & Manda.*

Flower of pale, delicate pink; disk petals strap-shaped, very numerous and crowded; ray petals few, reflexed. Anemone section.

— Popularity. *Henderson.*

Delicate flesh pink, finely incurved, large and handsome. The ends of the petals are cut so as to resemble a stag's antlers.

— Princeton. *Pitcher & Manda.*

Large flower of bright golden yellow, with pointed petals. Single.

— Purity. *Pitcher & Manda.*

Flower very large, single; pure white, with large yellow button-like center; petals very broad, slightly reflexing. Hairy section.

Chrysanthemum, Rahway. *Pitcher & Manda.*

Large white flower, with reflexed pointed petals. Single.

— Rev. J. C. Hanna. *Dreer.*

Very large, perfectly formed flowers; pink, with ends of petals tipped with silvery white; one of the six that were awarded the Spaulding prize at Philadelphia.

— Rockland. *Dreer.*

Flowers of large size, rich golden amber, shaded with bronze; petals slightly toothed; fine flower, beautiful form, and an improvement on Frank Wilcox.

— Roslyn. *T. H. Spaulding.*

A clear mermet rose-pink; petals thick and heavy, cup shaped, solid to the center, immense in size, having been exhibited 11 inches across; habit the best; stems stiff and erect, covered with most luxuriant foliage. Awarded medal at Philadelphia, certificate at Madison Square Garden.

— Rosstrevor. *Dreer.*

Bronzy yellow, of large size, borne on stout stiff stems; petals stiff and crisp, beautifully incurved, forming a large, rounded surface; very similar in shape to Harry E. Widener.

— Ruth. *Dealers.*

White; size and general make-up similar to Mrs. L. C. Madeira among yellows. Its keeping qualities, when cut, are most remarkable. This variety became known as Marguerite about Philadelphia. H. G. Standen.

— Ruth Cleveland. *T. H. Spaulding.*

A chaste and beautiful flower of large size, petals broad and cup-shaped, outer rows reflex, inner ones incurve, forming a high-built center of most delicate silvery pink. One of the collection winning the Astor cup.

— Salem. *Pitcher & Manda.*

Flower of salmon rose, with tubular spatulate petals. Single.

— Secretary Farson. *Vaughan.*

A large ball, with tubular petals; bronzy yellow, of extra large size. Raised by Surman.

— Shenandoah. *T. H. Spaulding.*

Broad flower of immense size, full and double to the center; petals over an inch in width; color a new shade of deep chestnut brown on both upper and lower surfaces, the entire bloom being a solid color without shadings. Philadelphia prize winner. Raised by Surman.

— Simplicity. *Pitcher & Manda.*

Flower of good size; white, with green center; petals incurved. Hairy section.

Chrysanthemum, Spartel. *N. Smith & Son, Adrian, Mich.*

Color delicate rose-pink without any trace of violet or magenta. The hair-like filaments are very prominent. Constitution, foliage and general growth resembles Fabre, which is perfect. Received Certificate of Merit at Indianapolis. Mlle. M. Fabre × Mrs. A. Hardy.

— Spring Grove. *Dreer.*

Flowers very large, of a rich crimson color, reverse of petals deep bronze.

— Surprise. *Henderson.*

Bronzy red, bold, handsome flowers of large size and globular form.

— Sweet Lavender. *John Thorpe & Son.*

White, shaded blush, lower petals tinged with lavender; flowers of large size and form, slightly perfumed.

— The Herald. *Pitcher & Manda.*

Flowers very large, bright golden yellow; the central florets tubular, large, an inch or more long, notched at the rim, crowded into a compact head; ray petals in a single row, very long, drooping when old. Anemone section.

— T. H. French. *T. H. Spaulding.*

A handsome, brilliant scarlet.

— Trenton. *Pitcher & Manda.*

Large pure white flowers, with narrow pointed petals. Single.

— Tuxedo. *N. Smith & Son.*

In growth is like Wilcox in every respect except foliage, which resembles that of Cullingfordii. When flowered in heat is a beautiful amber in color, and a bright orange when grown cold. Reflexed. Frank Wilcox × Cullingfordii.

— Vanity. *Pitcher & Manda.*

Flower large, semi-double, of a lilac-pink color; the petals are but sparingly hairy, and are incurved. Hairy type.

— Victor. *Dreer.*

A rich golden yellow, slightly shaded with bronze. Awarded a first-class certificate at the Philadelphia Exhibition in 1891.

— Volcanic. *John Thorpe & Son.*

Flowers reflexed and plumed, canary yellow, reverse of petals lighter. As the flowers open they reflex to the stem, with the center lighter than the body. No other yellow chrysanthemum is of this shade. Strong stems and good grower.

— W. A. Manda. *Pitcher & Manda.*

Flower very large, of a clear golden yellow color. The plant is vigorous in growth, and the flower is borne upright on a stout stem. Hairy section. Japan. P. Barry, introduced by Henderson, is said to be the same.

Chrysanthemums, Zambesi. *N. Smith & Son.*

Resembles W. A. Manda in its hairy petals. It partakes of Lincoln in color (bright yellow) and dwarf, short-jointed growth. The foliage is similar to that of Hardy, only much larger. W. H. Lincoln × Mrs. A. Hardy.

[Chrysanthemum, 156 varieties.]

Cinnamomum Zeylanicum. *Reasoner Bros., Oneco, Fla.*

Cinnamon of commerce. Hardy in south Florida.

Clematis integrifolia × viticella. *Boskoop Holland Nursery Co.*

A new race, growing three to five feet, and of excellent habit; colors blue, lavender, rose, reddish rose, etc.

Cleome pungens, an old garden plant from South America, was reintroduced in 1890, by *John Lewis Childs,* as a native of the western states. The Spider Plant of *J. A. Everitt & Co.*, offered in 1889, is probably the same.

Coleus, Fire Crest. *Henderson.*

Carmine crimson.

Collard, Pink Heart. *Landreth.*

The lower leaves are green, with bone-white veins or ribs; the interior leaves are ivory white, like finest bleached celery; the leaves about the heart are pink and purple.

Corn, Pearl of Waterloo. *Emerson Seed Co., Omaha.* 1891.

A cross between the Honey Sweet and the Early Bonanza. It inherits the sweetness and deep white grain of the Honey Sweet. Bonanza stalks grow five to six feet high, producing each from two to five handsome ears. It is ready to gather for table use about three days later than the New Cory.

— Pop, Tattooed Yankee. *Breck.*

A rice corn, the ear parti-colored with yellow and black.

— Sweet, Country Gentleman. *E. D. Woodruff & Sons, Orange, Ct. Henderson.*

The ears are of good size, and produced in abundance. The cob is small, giving great depth to the kernels, which are of pearly whiteness; delicious in quality.

— Eastman's Early. *Eastman Seed Co., Maine. Breck.*

It is about like the Cory in earliness; superior in quality, and outyields other early kinds, two good ears on a stalk being common when it is given plenty of room. It has white kernels and a pure white cob. Originated in Maine.

— Golden Nugget. *James Vick's Sons.*

This corn is very tender, very sweet, and of an excellent, rich flavor. The ears are of medium size, twelve-rowed and well filled. In time of maturity or gathering for eating purposes it will class with Crosby's Early.

— Robinson's Early. *J. A. Everitt Seed Co.*

Ears long and closely set with grains, as early as Early Adams, which has ears about half the size. It possesses hardiness and ability to withstand exposure when planted early. Origin, Indiana.

Cornflower (*Centaurea Cyanus*), Victoria. *Dealers* (*from Hillebrand & Bredmeier*).

A miniature form, rarely exceeding eight inches in height. Flowers dark blue.

Cornus Nuttallii. *Pilkington & Co., Oregon.*

A small, round-headed, deciduous tree 20 to 50 feet high, covered for some time in spring with its large, white flowers, followed in autumn by a russet colored fruit. Native.

Cratægus chlorosarca. *Berckmans, Georgia.*

Pyramidal growth; fruit orange-yellow. Imported from France.

— Francois Rigaud. *Berckmans, Georgia.*

Imported from France.

Cucumber, Buxton's Prize. *Farquhar, Boston.*

An imported dark green strain of White Spine. Originated with S. P. Buxton, Peabody, Mass.

— Hill's Forcing White Spine. *Schlegel & Fottler, Boston.*

It has been carefully selected from the best Arlington White Spine; of finest form and dark green color. Valuble for field and house cultivation. G. H. Hill.

— Japan Climbing. *Berger & Co., San Francisco.*

This cucumber can be trained on poles instead of running on the ground, thereby saving a great deal of room. It ripens rather early, and is a most prolific bearer. Specially adapted to pickling purposes, although very good for salads It will be a valuable addition to the vegetable garden, especially where space has to be economized.

— Landreth's Choice. *Landreth.*

Distinct from any other sort in fruit and foliage; choice in form Good for salting or slicing. From Japan.

— Maule's Extra Early. *Maule, Philadelphia.*

A cross between Early Russian and Green Prolific. Fully as early as the former, while it combines all the fine pickling qualities of the latter. Seldom, if ever, produces a cucumber too large for pickling.

— Salzer's Earliest. *Salzer.*

Ripens but a few days after the Early Market, and bears large, finely shaped cucumbers in abundance.

— Salzer's Market Garden. *Salzer.*

This variety grows very long, is productive, matures very early, is handsome in appearance, and desirable in color.

— Thorburn Commercial Pickle. *Thorburn.*

This variety is in many points a marked improvement on all other strains of White Spine, to which class it belongs. It is uniform in shape and size, tender and crisp when used for slicing; productive. It retains its dark green color, after being picked, longer than any other variety. It is also earlier, and remains in bearing longer than the old strains of White Spine. Originated with the introducers.

Dahlia, Tom Thumb. *Henderson.*

The dwarf habit and profusion of bloom of these dahlias, with brilliant colors, make them unrivaled for bedding. We are indebted to Mr. T. W. Girdlestone, the secretary of the National Dahlia Society of England, for this new race.

Daisy, Paris, Yellow Branching. *Henderson.*

A strong-growing and branching variety of this old plant, with golden-yellow flowers. May be had in bloom all winter.

— (Bellis), Snow Crest. *Dreer.*

Its habit of growth and size of flowers, in comparison with older varieties, are gigantic. The flowers, which are borne on stout, stiff stems from 6 to 10 inches long, are of the purest white and full to the center. When fully developed they rise to a conical or sugar-loaf form, and well-grown specimens will cover a silver dollar. It makes an admirable hardy garden plant, or may be forced for cut flowers under the same treatment as violets.

Delphinium hybridum var. Barlowii. *Manning.*

Very large semi-double flowers. deep blue, with brownish center.

— Nuttallii. *Pilkington & Co., Oregon.*

Simple stems, with long spikes of very showy blue flowers. 1 to 2 feet. Native.

— pauciflorum. *Pilkington & Co., Oregon.*

Slender, branching stems, 1 to 3 feet high, with showy blue flowers in early summer. Native.

— Przewalskianum. *Manning.*

Siberian species, with deep yellow flowers. 2 feet.

— Zalil. *Manning.*

Foliage distinct in shape; flowers deep sulphur-yellow, in broad spikes. 3 feet.

Deutzia gracilis, foliis aureis. *Berckmans, Georgia.*

Dianthus latifolius. *Manning.*

Broad heads of large, deep red flowers.

— Querterii. *Manning.*

Showy double, deep-maroon flowers throughout the summer. 9 inches

Digitalis lanata. *Manning.*

Dark green, hairy foliage. Flowers creamy yellow, in long, showy spikes. 2 feet. E. Europe.

— ochreuleuca. *Manning.*

Pale yellow flowers, veined with brown, and in long, spiry spikes. 3 feet. Europe.

— Thapsi. *Manning.*

Showy spikes of rosy purple flowers. 4 feet. Europe.

Dodecatheon dendatum (D. frigidum var. dentatum). *Pilkington & Co., Oregon.*

A white-flowered species, 4 to 6 inches high. Native

Dodecatheon Hendersoni. *Pilkington & Co., Oregon.*

A fine species, with a rosette of small leaves at the gronnd and a slender stem, 10 to 16 inches high, having an umbel of showy, drooping pink flowers in early spring. Native.

Echinops exaltatus. *Manning.*

Showy, light-green, deeply indented foliage, and heads of white flowers. 7 feet. Europe.

Egg-Plant, Perfect Purple. *Francis Brill, Riverhead, N. Y. (Long Island).*

Elæagnus, Frederici variegata. *Berckmans, Georgia.*

A dwarf shrub, with undulated leaves, bright yellow center, margined green.

— Japonica var. macrophylla. *Berckmans, Georgia.*

Leaves very large, undulated, clear green on upper side, sivery white on under side.

— Japonica var. variegata. *Berckmans, Georgia.*

Emmenanthe penduliflora. See California Yellow or Golden Bells.

Epipactis giantea. *Pringle & Horsford, 1883. Pilkington & Co., Oregon, 1892.*

A fine orchid 1 to 2 feet high, with numerous spikes of curious brown flowers in summer. Native.

Erigeron Howellii. *Pilkington & Co., Oregon.*

A beautiful plant, 12 inches; very showy, with large white flowers in spring. Native.

Erinus alpinus var. carmineus. *J. W. Manning, Reading, Mass.*

Flowers brilliant carmine, showing to excellent advantage against the pretty foliage. Europe.

Erodium macradeneum. *Manning.*

Showy fern-like foliage. Pale violet flowers, in large open panicles. 6 inches.

— Manescevii. *Manning.*

Flowers purplish-red, in very showy, broad, flat panicles. 1 foot.

Erythræa diffusa. *Manning.*

A creeper, with deep, glossy green leaves and showy pink flowers on wiry stems. For rockwork or half shady spots. 4 inches. W. Europe.

Forget-Me-Not, Blue Perfection (Myosotis dissitiflora grandiflora). *Henderson.*

The flowers are much larger than any other variety, borne in graceful sprays, which are very valuable for cutting, the buds opening in water for a fortnight; color an exquisite shade of blue. Raised by a specialist in Scotland, where it has received encomiums from their critical gardeners, as well as a certificate from the Royal Botanic Society.

Forget-Me-Not, Rose Victoria (Myosotis alpestris Victoria rosea). *Henderson.*

The flowers of this variety are rose color, with a central double bloom.

Funkia lancifolia var. univitata. *Manning.*

The midrib has a silvery or golden hue.

Garcinia Morella. *Reasoner Bros., Oneco, Fla.*

Gamboge Tree from Hindostan.

Geranium, Alfred Tennyson. *E. G. Hill & Co.*

Very large trusses, composed of large flowers, semi-double; color clear orange, petals marked with heliotrope. Bruant type.

— Chaplin. *E. G. Hill & Co.*

Habit semi-dwarf, small foliage, nicely zoned; large florets, semi-double, of brilliant red, shading to white center. Bruant type.

— Comte de Blacas. *E. G. Hill & Co.*

Of beautiful habit, foliage of medium size, with good zone, large florets in good-sized truss, center brilliant orange-salmon, with brighter border, and large white eye. Single. Bruant type.

— Docteur Clenet. *E. G. Hill & Co.*

Strong. nicely branching habit; very large trusses well above the foliage, florets large, round and of bright capucine scarlet; fine for massing. Single. Bruant type.

— Mrs. Robert Sandiford. *Hill.*

The flower is of large size, well doubled, beautifully ruffled along the edges of the petals, and of glistening snow white color. Its lasting qualities when cut are good

— Van Dael. *E. G. Hill & Co.*

Enormous trusses, florets large, center bright, silvery rose, bordered white; quite a new color among the Bruants. Single.

Gladiolus, Cisco, Mariposa, Santa Rosa, Shasta, Yolo. *Luther Burbank, Santa Rosa, Cal., 1890.*

Glaucium Fischerii. *Manning.*

Brilliantly colored, silvery foliage and showy, horned, poppy-like flowers of a deep orange color. 3 feet.

Gloxinia grandiflora, Corona. *Dealers.*

A hybrid, distinguished by its enormous blooms, 3 to 4 inches across, with six and often seven divisions or lobes, and a large, richly veined throat of deep violet red, passing into a beautiful indigo towards the orifice. This color merges into a pure white outer ground, marked with innumerable dark blue spots.

Gooseberry, Aurora. *Phil. Strubler, Naperville, Ill.*

— Columbus. *Ellwanger & Barry.*

The fruit is large, handsome, of a greenish yellow color, and the quality is excellent. The plant is vigorous and productive, and does not mildew.

— Lancashire Lad. *Green's Nursery Co., Rochester.*

Imported. A well known English gooseberry.

Grape, America. *T. V. Munson, Denison, Texas.*

Cluster large, conical and shouldered; berry large, black, skin thin, flavor very good; productive. Post Oak × Rupestris.

— Bailey. *T. V. Munson.*

Cluster large, cylindrical; berry large and black, skin thin and tough, flavor very good; very productive. Post Oak × Triumph.

— Beacon. *T. V. Munson.*

Cluster very large, conical; berry very large, black, skin thin and tough, flavor very good; productive. Post Oak × Concord.

— Big Extra. *T. V. Munson.*

Cluster large, cylindrical; berry large and black, skin tough, flavor very good; very productive. Post Oak × Triumph.

— Big Hope. *T. V. Munson.*

Cluster very large, cylindrical, double; berry medium in size, dark red, the skin thin but tough, flavor very good; very productive. Post Oak × Triumph.

— Black Herbemont. *T. V. Munson.*

Cluster very large, conical; berry small and black, skin thin and tough, flavor best; very productive. Herbemont Seedling.

— Carman. *Rural Publishing Co., New York.*

Cluster very large, conical; berry large and black, skin tough, flavor very good; very productive. Post Oak × Triumph, by T. V. Munson.

— Crown. *T. V. Munson.*

Cluster large, cylindrical; berry medium and dark red, skin tough and thin, quality best; productive. Post Oak × Triumph.

— Dr. Collier. *T. V. Munson.*

Cluster large, conical; berry large, dark red, skin thin but tough, flavor good; productive. Post Oak × Lindley.

— Dr. Hexamer. *T. V. Munson.*

Cluster large, cylindrical; berry large, black, skin tough, flavor very good; productive. Post Oak × Triumph.

— Early Ohio. *C. S. Curtice Co., Portland, N. Y.*

A very early black grape, with a compact, shouldered bunch, ripening ten days to two weeks before Moore's Early. The original seedling was found between rows of Delaware and Concord at Euclid, Ohio, by R. A. Hunt.

— Elvicand. *T. V. Munson.*

Cluster small and shouldered; berry large, dark red, skin thin and tough, quality good; productive. Elvira × Mustang.

— Fern Munson. *T. V. Munson.*

Cluster large, conical; berry large and black, with a thin skin and of best flavor; productive. Post Oak × Triumph.

— Governor Ross. *T. V. Munson.*

Cluster very large, conical; berry large and yellow, the skin thin and tough, quality best; medium productive. Triumph seedling.

Grape, Hopkins. *T. V. Munson.*

Cluster very large, conical ; berry of medium size, black ; skin thin and tough; of very good quality ; very productive. Post Oak × Cynthiana.

— Laussel. *T. V. Munson.*

Cluster medium, shouldered ; berry medium, black with a tough, thin skin and very good quality ; productive. Post Oak × Gold Coin.

— Marguerite. *T. V. Munson.*

Cluster medium in size, cylindrical, berry of medium size, purple, skin thin and tough, flavor best ; productive. Post Oak × Herbemont.

— Mrs. Munson. *T. V. Munson.*

Cluster large, conical shouldered ; berry small to medium, purple; skin thin and tough, quality best ; very productive. Neosho × Herbemont.

— Muench. *T. V. Munson.*

Cluster large, conical ; berry small to medium, purple, with thin but tough skin, flavor best ; very productive. Neosho × Herbemont.

— Neva Munson. *T. V. Munson.*

Cluster large, cylindrical and shouldered ; berry small, purple, skin tough and thin, quality the best ; very productive. Neosho × Herbemont.

— Onderdonk. *T. V. Munson.*

Cluster large, conical ; berry small, white, skin thin and tough ; quality best ; productive. Herbemont seedling.

— Opal *T. V. Munson.*

Cluster medium, shouldered ; berry large, yellow ; skin thin and tough ; quality very good ; productive. Lindley seedling.

— Oriole. *T. V. Munson.*

Cluster large, cylindrical and shouldered ; berry small and black, with thin and tough skin, and best quality ; productive. Post Oak × Devereux.

— Perry. *T. V. Munson.*

Cluster large, conical ; berry small to medium, purple ; the skin thin and tough, flavor best ; very productive. Post Oak × Herbemont.

— Pierce. *California Nursery Co., Niles, Cal.*

"A sport from Isabella, originating some twelve years ago with Mr. J. P. Pierce, of Santa Clara. The foliage is remarkably large, and the vine an exceedingly strong grower and prolific bearer. The berries, like the leaves, are of extraordinary size, twice as large as those of its parent, black, with light bloom, and when ripe are exceedingly sweet, delicious and slightly aromatic, the pulp readily dissolving. Mr. Pierce has had it in cultivation under every condition, and it has remained constant, showing no indication of running back to the parent. The entire crop of two acres has been shipped to San Francisco by Mr. Pierce for the past six years under the name of Isabella Regia, and always realizes the highest market price." (California Nursery Co.)

Illustrated in *Pacific Rural Press*, January 2, 1892.

Grape, Reagan. *T. V. Munson.*

Cluster large and conical; berry medium, black, the skin thin and flavor very good; productive. Post Oak × Triumph.

— Salzer's Earliest. *John A. Salzer, La Crosse, Wis.*

Berries large full, luscious and of a decidedly better quality than the Concord, which it resembles in type. It is very hardy, prolific and early.

— Vinita. *T. V Munson.*

Cluster large, conical, shouldered; berry small to medium, purple, with a thin tough skin, and of best quality; very productive. Post Oak × Herbemont.

[Grapes, 28 varieties.]

Habenaria gracilis. *Pringle & Horsford, 1883.*

Stout stems 1 to 2 feet high, with spikes of small green flowers in summer. Offered this year by Pilkington & Co. Native.

Hastingsia alba. *Pilkington & Co., Oregon.*

Stems 18 to 20 inches high, with spikes of small, white flowers. Native.

— bracteosa. *Pilkington & Co., Oregon.*

Native.

Helichrysum. Silver Ball. *Dreer.*

Over 2 feet high, bearing a profusion of large, pure white, double flowers.

Heliotrope, Giant Flowering Hybrid. *Henderson.*

Seed sown in April produced luxuriant, healthy, bushy plants 18 inches to 2 feet high by July, and they bloomed abundantly until cut down by frost. The clusters of bloom were immense, many measured 6 inches across, and were deliciously fragrant; colors, lavender, white, purple, etc.

Hollyhock, Black Prince. *Curry Bros., Milwaukee.*

The flowers are a beautiful glossy black color, of fine form, very double, and are freely produced. It is a vigorous grower and reproduces itself true from seed.

Hyphæne Natalensis. *Reasoner Bros., Oneco, Fla.*

Palm from South Africa.

Impatiens Sultani, Hybrida. *Dealers.*

Beautiful hybrids in varying shades of color, from delicate pink to the deepest red. A strain from which King Albert (see next page) and others are derived.

Impatiens Sultani, King Albert. *Dealers.*

This is the best of the above new hybrids; its flowers are of an exquisite rosy crimson shade and are freely produced.

Inula Hookeri. *J. W. Manning, Reading, Mass.*

Foliage broad and showy; flowers orange-yellow, in immense heads. Himalaya. 2 feet.

Ipomœa. See Moonflower.

— Heavenly Blue. *Mrs. Theodosia B. Shepherd, Ventura, Cal.*

The foliage is very large, heart-shaped, thick and light green; flowers four to five inches across in large clusters, and light blue with a yellow throat, suffusing softly into blue. Originated in the garden of Mrs. Shepherd, who thinks it "evidently a child of Ipomœa Learii and Mina lobata."

Iris, Imogene Ware. *Manning.*

Clear lavender, large.

— macrosiphon. *Pringle & Horsford, 1883. Pilkington & Co., Oregon.*

A dwarf species, 6 to 8 inches high, with narrow grass-like leaves and very showy white or cream-colored flowers. Native.

— Prince of Wales. (Albicans.) *Manning.*

White. Late flowering.

Jasione perennis. *Manning.*

Flowers deep blue and showy, in large heads. 1 foot. W. Europe.

Juneberry. Rocky Mountain Dwarf (Amelanchier alnifolia). *Chas. E. Pennock, Fort Collins, Col.*

From the mountains of Colorado. Bush two to four feet high; fruit one-half inch in diameter, dark purple in color, sweet and good; ripens from first to middle of July. Amelanchier alnifolia has been in cultivation some years as an ornamental plant. See ANNALS for 1892, 233.

Kale, Salzer's Erfurt Dwarf. *Salzer.*

Introduced from Erfrut, where kale is grown in great perfection. It is extremely prolific, of the richest color and most delicious flavor.

Leek, New Perpetual. *Henderson.*

A distinct and valuable variety, which produces continuously a number of stalks or suckers from one plant the first season from seed. The stalks are not as heavy as those of the ordinary leek, but for this reason are more desirable for cutting up for use in soups, or other ways in which leek is used. The flavor is identical with that of the other varieties of leek, and it is likely to prove entirely hardy. Can be propagated either by sowing seed or by division of the plants.

Leiophyllum buxifolium, var. prostratum (Mountain Heath). *Harlan P. Kelsey, N. C.*

Beautiful, hardy, high mountain variety of the east, with prostrate habit, making it one of the finest plants for rockwork in cultivation. Mr. Kelsey has sold this plant for eight years under the name of L. buxifolium, not knowing it to be distinct from the species. Native.

Lettsomia sp. *Reasoner Bros., Oneco, Fla.*

India. Perennial pink flower, member of Morning Glory family.

Lettuce. Half Century. *Childs.*

Was introduced in 1890. See ANNALS for 1891, 191.

— Hittinger's Belmont Forcing. *Schlegel & Fottler, Boston.*

A large forcing lettuce, originating with Hittinger Bros., Belmont, Mass. Said to be identical with Big Boston.

— Large Boston. *Thorburn.*

A large strain of the Boston lettuce.

Big Boston was offered by Henderson two years ago. See ANNALS for 1890, 169.

— Salzer's Colossal. *Salzer.*

One of the best sorts to withstand the extreme heat of our long, hot summer months, as it forms large, solid heads without showing the slightest disposition to run to seed. It is equally well adapted for early spring sowing. Of very rapid growth, with few outer leaves; in color it is a very light green, almost white, and forms a very large, solid head, of the finest quality.

— Salzer's Earliest. *Salzer.*

Earlier than the Early Simpson or Tennis Ball; is large, of excellent flavor and rapid growth. From Germany.

— Yellow Thick-Head Cabbage. *Dealers.*

It has a very large and unusually solid head, often 12 inches in diameter, and with but few outside leaves. It stands both excessive wet and dry weather during growth without injury. It blanches naturally, is crisp, tender, of excellent flavor, and entirely free from bitterness. The outer leaves are dark green in color, while the inside is yellowish white. From Germany.

Leucophyllum Texana. *Berckmans, Georgia.*

A rare shrub, occasionally found in southern Texas. The plant grows to a hight of four to six feet, foliage downy and very white, flowers purple, produced very profusely during midsummer. A most strikingly handsome shrub. Illustrated in *Garden and Forest, 1890,* p. 489.

Lilium Wallichianum, var. superbum. *W. C. Strong, Waban. Mass., Elliott & Sons.*

Exhibited for the first time in this country by Mr. Hunnewell and Mr. Strong in 1891, before the Massachusetts Horticultural Society. The Flower Committee reported: "It is a magnificent lily, with an immense funnel-shaped flower, with solid texture and beautiful in color, which is white, shaded with chocolate on the outer side, and delicately tinged with yellow on the inside." It was awarded a first-class certificate. Himalayas.

Lobelia syphilitica var. alba. *Manning.*

A pure white form, with much larger, longer and more showy spikes than in the type. Native.

Lupinus Hartwegii. *Manning.*

A western lupin, with long, showy spikes of deep blue flowers.

Lycium Chinense, Matrimony Vine. *Henderson. Manning.*

A most vigorous climbing plant when trained to an arbor, or in any location where a hardy, vigorous climber is desired. It sends out numerous side branches, so that it covers a great amount of space in a short time, and has bright purple flowers, which are succeeded by brilliant scarlet berries. It continues flowering, and new berries are forming from late spring until frost. (See *Garden and Forest*, iv. 100, fig. 20, 1891.)

Lysichitum Kamtschatcensis. *Pilkington & Co., Oregon.*

The numerous leaves are large, often 3 or 4 feet long, of a peculiar yellowish green, giving it a more decided tropical appearance than any other North American plant.

Maakia Amurense. *Berckmans, Georgia.*

A shrub from the north of Asia, resembling Yellow Wood or Cladrastis tinctoria in general characteristics.

Marigold, French Gilt Edge. *Henderson.*

A new, large flowering variety of the old double dwarf French marigold, differing from it in the more robust growth and in the larger and more perfectly double flowers, measuring from 3 to 4 inches across, which are borne in uninterrupted succession until frost, on strong stems, and well displayed above the foliage. The color of the flower is a velvety brown maroon, edged with yellow.

Matrimony Vine. See Lycium Chinense.

Melon, Chinese Preserving. *Childs.*

The melons are large, nearly round, very dark green, and covered with fine hair. Inside they are perfectly solid and pure white. For preserves and sweet pickles it is excellent. It is very tender and delicious.

Molucella spinosa. *Thorburn.*

An annual and biennial shell-flower, introduced from Assyria. When young, its chief attraction is in its numerous delicate rose flowers, but it grows rapidly to a height of 6 to 8 feet, and is then most valuable on account of its light green foliage, which contrasts most effectively with its brownish red, four-cornered stems.

Monardella villosa. *Pilkington & Co., Oregon.*

Eight to 12 inches high, with small leaves, and heads of small pink flowers all summer. Native.

Moonflower. See Ipomœa.

— Variegated. *Henderson.*

The flowers are 5 to 7 inches across, and bloom very early, opening early in the evening. Foliage and flowers vary in form on different plants, some flowers being scalloped, others perfectly round, others star-shaped ; the foliage also varies from the original shape to oak-leaved and heart-shaped forms.

Mulberry, Burrell's Everbearing. *Ramsey & Son, Texas.*

A native of Lampasas county; large and productive.

Muskmelon, Columbus or Beck's Columbus. *Livingston; also Dreer.*

A handsome melon, grown for many years by Antone Beck, of Oregon, Ill. The flesh is peculiarly spicy, melting and sweet; the skin is finely netted, and the fruits are of perfect nutmeg shape. As a shipping melon it is unsurpassed. Named by Livingston's Sons, who purchased the original stock in 1891.

— Farquhar's Honey-Drop. *Farquhar, Boston.*

The flesh is very thick and of a rich yellow color; fair average size; extra melting flavor; has earliness and great productiveness.

— Great Combination. *Childs.*

Was introduced in 1890 instead of 1891. See ANNALS for 1891, 193.

— Iowa Seed Co.'s Improved Green Nutmeg. *Iowa Seed Co.*

Fruit of fair size, very rich, melting and of exquisite flavor.

— Jersey Belle. *Johnson & Stokes.*

A large, early melon, of best quality and handsome appearance, which does best on light soils. Distributed for trial in 1891, as "New Muskmelon, No. 100."

— Long Island Beauty. *Thorburn.*

A new variety of the Hackensack type, originated on Long Island. It is of superior quality, with green flesh, and densely netted. In shape it resembles the Hackensack, but is slightly more ribbed. Very early.

— Six Oaks Cantaloupe. *J. H. Jones, Herndon, Ga.*

— Santa Claus. *Henderson.*

The color of the flesh is a delicate peach pink on the inside, although it will at times run yellow in color, and the outer skin is dark green marked with brown; the quality is delicious. All of this class of melons have much thicker and finer flesh than ordinary muskmelons, hence the long-keeping qualities. This variety rarely ripens in the open ground, so the melons must be picked off in the fall and put in some cool place, where, however, there is no danger of freezing, until they are wanted. It is usually necessary to place them in a warm room for three or four days before using, so as to ripen them up thoroughly.

Musk Plant, Double-flowering. *Henderson.*

Nabalus Frazeri. *Harlan P. Kelsey, N. C.*

Pendulous, green flowers. Fall. Native.

Narthecium Californicum. *F. H. Horsford, 1888 or 1889.*

A plant 8 or 10 inches high, with grass-like leaves and spikes of yellow flowers in summer. Native. Offered this year by Pilkington & Co.

Nectarine, Jumbo. *Ramsey & Son, Mahomet, Texas.*

Originated from peach seed on Mr. Sarrell's place, in Burnet county. As large as Chinese Cling peach. Rich yellow color, delicious flavor.

Negundo. See Acer Negundo.

Nymphæa, Mauvii. *Samuel Henshaw, W. Brighton, N. Y.*

A seedling, raised by Samuel Henshaw, Staten Island. Delicate, pale mauve, sweet scented, day bloomer.

Onion, Early Red Wethersfield. *Iowa Seed Co.*

An extra choice, early maturing, solid and productive sort.

— Extra Round, Yellow Globe Danvers. *Gregory.*

A globular strain of Danvers, producing very heavy yields when well manured.

— Salzer's Gladiator. *Salzer.*

It possesses the large size, mild flavor, excellent keeping, and all other good qualities of the Prize Taker, but differs from that variety in its handsome skin, which, in contrast with its pure white, fine-grained flesh, attracts marked attention in market. Gladiator grows quicker and can be grown at least one-third larger than any other red onion. From Spain.

— (sets), Autumn White Wax. *Landreth.*

Ophiopogon Japonica. *Manning.*

Flowers deep purple, in showy spikes. 2 feet.

— Jaburan. *Manning.*

Spikes of clear white flowers, rising above the long, narrow, recurved, green foliage. 2 feet. Japan. [The var. variegata has been introduced before.]

Orange, Jaffa Blood. *Reasoner Bros.*

Fruit first-class, like the Jaffa, but blood-red inside. Originated with Rev. Lyman Phelps, Sanford, Fla.

Oxalis trilliifolia. *Pilkington & Co., Oregon.*

Large, graceful leaves and umbels of white, striped with pink; flowers all summer. Native.

Pansy, Currie's Superfine Scotch. *Currie Bros., Milwaukee.*

This strain of pansy is saved from varieties that have received the first premium at the international flower shows of Great Britain and other prominent exhibitions for a number of years. It is unexcelled by any in size of flower, many of the single blooms measuring over 3 inches across, and in richness of color and beautiful markings.

— Peacock. *Dealers.*

This beautiful pansy was named Peacock because of the ultramarine blue contained in the upper petals of the flower, which most nearly resembles this color in the feathers of a peacock. The name is further justified by the richness of shades and beautiful, almost iridescent, blending of colors.

— Rosy Morn. *Burpee.*

A rosy red pansy, with a distinct white edge around each petal, while the three lower petals are blotched with a deep, purplish red; the flowers are of perfect form and good size.

Pansy, Vautier's Mammoth. *Dealers.*

This strain of enormous pansies has been raised and perfected for twenty years by Charles H. Vautier. In size and perfect form they rival anything heretofore introduced. The flowers measure 2½ to 4 inches across, of most perfect form, circular shape. The plants are bushy and compact, and flower profusely. The colors are rich and varied, embracing all the fancy spotted and striped colors.

Papaver. See Poppy.

Parnassia Californica. *Gillett & Horsford, 1891.*

Offered this year by Pilkington & Co. Native.

Pea, Charmer. *James Vick's Sons.*

Plants 3 to 4 feet high; pods large, scimitar-shaped, bearing 7 to 9 peas of high quality. Season follows Little Gem and before Champion of England.

— Dwarf Rural New-Yorker. *O. H. Alexander, Charlotte, Vt.*

A foot high, of great productiveness and best quality. Cross between Rural New-Yorker and Little Gem.

— Gladiator. *Henderson.*

The plant is robust and vigorous, stem branched, growing about 3 feet in height; exceedingly productive, bearing in pairs an abundance of long, curved, handsome pods, which are very closely filled with medium-sized peas of excellent quality. A first-class certificate was conferred on this variety by the Royal Horticultural Society of England.

— Nebraska Lightning. *Emerson Seed Co., Omaha, 1891.*

— Snowflake. *Alexander.*

A selection from Early Kent, originating with Alexander in 1886. Earlier than its parent, more dwarf and prolific, and better in quality.

Peach, Aurora. *J. H. Jones, Herndon, Ga.*

A cross-bred seedling from the Chinese Cling and Mary's Choice. Fruit very large; color rich cream, with dark red cheek. A freestone. Ripe 1st to 10th of July.

— Beauty's Blush. *J. H. Jones, Ga.*

A cross-bed seedling from the Chinese Cling and the Tillotson. Fruit uniformly large, high colored, melting and delicious. Freestone. Ripens in Georgia from the 20th of June to 10th of July.

— Crimson, Beauty. *A. F. Boardman & Co., Auburn, California.*

Very highly colored, large and uniform in size, of firm, fine texture and superior flavor; the tree is a strong grower, with heavy, dark foliage; ripens in November; freestone. There is an older Crimson Beauty peach, which appears to be distinct from this.

— Gold Ball. *Ramsey & Son, Mahomet, Texas.*

Resembles a large orange. Cling. August.

Peach, Herbert. *J. H. Jones, Ga.*

A cross-bred seedling from the Chinese Cling and Salway. A yellow clingstone, with dark velvet cheek; large, delicious flavor; ripens 20th August.

— Hero. *J. H. Jones, Ga.*

A seedling from Chinese Cling. A very much larger and higher-colored fruit, and is free from rot. Ripens in Georgia 20th of July.

— McShaw. *Ramsey & Son, Mahomet, Texas.*

A large, October peach from Mr. Shell, of Georgetown, Texas. Clingstone. Runs from 9 to 14 inches in circumference.

— Miller. *J. H. Jones, Ga.*

A magnificent yellow freestone; slightly stained with red, ripening in June. This peach originated in Savannah, Georgia.

— Sneed. *Stark Bros., and others.*

— World's Fair. *Home Nursery Co., Normal, Ill.*

Originated in eastern Missouri; is a seedling and one of the earliest peaches, which ripened on the parent tree as early as the 4th of June. The tree is hardy and vigorous; fruit very large, roundish and handsome; color deep red in the sun, softening to yellowish ground in shade; juicy and of most excellent flavor. Ripens from 10th to 15th of June.

— Zane. *Joseph Morrison, Cadiz, Ohio.*

Pear, Lincoln Coreless Winter. *Wm. Parry. J. S. Collins & Sons.*

Tree a healthy, vigorous grower, with dark, luxuriant foliage, which it retains very late in the season; free from blight; an annual and abundant bearer. Fruit very large, excellent keeper, good shipper, very handsome, becoming highly colored, juicy, rich and of a very delicate flavor in March. There is an absence of seeds and core, there being an uninterrupted solid mass of flesh. Probably not identical with the Lincoln recorded in *Annals for 1891*, 194.

— Seneca. *Parry.*

A strong, vigorous, upright, hardy grower, retaining its foliage green and healthy very late in the season. Seedling of Bartlett. Fruit a beautiful bright yellow, with brilliant red cheek; large, rich, juicy, buttery, melting, sprightly, vinous; very attractive in appearance and of excellent quality. Ripens just after Bartlett. 1891 and 1892.

Pecan, Faust. *O. D. Faust, Bamberg, South Carolina.*

— Jewett. *W. R. Stuart, Ocean Springs, Mississippi.*

— Pride of the Coast. *Berckmans, Ga.*

Two years ago we received from Lower Louisiana a few nuts of extraordinary size. The person owning the tree stated that 24 nuts of the size sent us would weigh one pound, and that by carefully selecting the largest only 18 would be required to reach one pound weight.

The foliage is very distinct from any of the other varieties, showing this to be a well defined form. Some of the nuts which we received measured 2½ inches in length; kernel very sweet, and shell exceedingly thin. (Berckmans.)

Pelargonium. See Geranium.

Peony, Herbaceous. *B. M. Watson, Old Colony Nursery, Plymouth, Mass.* Nine Varieties:

— Belle Alliance.

Pure tender rose. A very double flower, and a most abundant bloomer.

— Count Moltke.

Ring petals crimson rose, inner petals copper colored, light shaded toward the margin, changing to white; giant flowers, of extraordinary beauty.

— Edelkönig.

Clear light crimson flower. The margins of the petals are silvery. The plant is of high growth, very suitable for the center of a group.

— Emperor William.

The flowers are of a rich black purple, with brilliant yellow stamens; finely formed.

— Empress Augusta.

Outer petals dark rose, center light rose, with silvery points. Deliciously fragrant.

— Fuerst Bismarck.

Flowers brilliant blood red; their form is globular; the color is very novel and striking. The flowers are delicately perfumed.

— Glory of Erfurt.

Pure white, some of the petals slightly touched with crimson veins. A huge flower.

— Lord Byron.

The ring petals are very large, of a delicate crimson; the inner petals are small, pure milk white. When fully developed the flowers are light rose, and are very delicate.

— Wacht am Rhein.

The flowers are most brilliant purple, with violet shadings. The stamens are sulphur yellow. Fragrant.

Pepper, County Fair. *Henderson.*

The peppers are of medium size, but are very solid and meaty, and of sweet, sprightly flavor, entirely free from any biting or burning taste.

Petunia, Ada. *Dreer.*

Purplish crimson, edged with pure white; very large. Double.

— Alamo. *Dreer.*

Mottled crimson, edged with white. Double.

Petunia, Apollo. *Dreer.*

Deep crimson centers, changing through the various shades of rose and blush to pure white on the edges. Double.

— Beauty. *Dreer.*

Beautiful silvery rose; a distinct variety. Double.

— Ceres. *Dreer.*

Pure white, mottled with rosy crimson; a fine large flower. Double.

— Clematis-Flowered Strain. *Dealers.*

— Clio. *Dreer.*

Pure white, with crimson mottled center. Double.

— Columbia. *Dreer.*

Pure white, with crimson center. Double.

— Darling. *Dreer.*

Clear silvery rose, marked with white. Double.

— Elvira. *Dreer.*

Pure white, with a finely mottled carmine center; a fine flower. Double.

— Eureka. *Dreer.*

Intensely rich purple, rarely splashed with white; a beautifully formed flower of large size. Double.

— Flora. *Dreer.*

Mottled white, crimson and blush. Double.

— Fortuna. *Dreer.*

Blush white, with purple crimson splashed center. Double.

— Gazelle. *Dreer.*

Rich crimson rose, edged with white. Double.

— Gem. *Dreer.*

Mottled crimson, purple and white. Double.

— Giant of California. *Henderson.*

Most of the flowers are ruffled or fringed on the edges, and are 4 to 5 inches across, with many varieties of colors, markings, veinings, blotchings and stripings, in the most grotesque and beautiful combinations.

— Incomparable. *Dreer.*

Rich crimson, shaded purple, heavily laced with white. Double.

— King of Emerald (Green Margined). *Dealers.*

This is undoubtedly the most striking of all the distinct colors of the large-flowering petunias. The plants are of stiff, erect growth, with heavy foliage, from which boldly stand out the immense flowers of perfect shape and form. The large flowers are a beautiful light rose color, with handsomely veined throats, broadly margined with a band, generally 1 inch across, of clear light green.

Petunia, Majestic. *Dreer.*

A beautifully fringed self-colored variety, of a rich, purple crimson. Double.

— Mermaid. *Dreer.*

Beautifully mottled white and rich, purplish crimson. Double.

— Nobilis. *Dreer.*

Mottled crimson, rose and white. Double.

— Pink Mound (Petunia carmen hybrida nana compacta rosea). *Henderson.*

This variety forms very dwarf, compact masses not over a foot high, which produce flowers of a brilliant rose-pink color, with a white throat in such abundance as to fairly hide the plant.

— Ring of Emerald (Petunia grandiflora compacta marginata). *Henderson.*

Grows to a height of only 10 or 12 twelve inches, forming a dense, globular bush, 14 to 15 inches across, covered with large, perfectly formed flowers of a rich crimson, edged with a broad green margin.

— Ruffled Giant Strain. *Mrs. Thomas Gould, Ventura-on-the-Sea, Cal.*

— Steel-Blue Veined (compact veined). *Dealers.*

The flowers are large, light rosy red, handsomely veined, and produced in such abundance as to almost cover the plants. They are dwarf and compact in habit, and make excellent pot plants without any support. From Germany.

— Sunbeam. *Dreer.*

An elegant flower, with deeply frilled edges; blush white in the center, passing to light rosy crimson on the edges. Double.

[Petunia, 26 varieties.]

Phlox. *J. W. Manning, Reading, Mass.* Thirteen Varieties:

— Agnes McLeod.

Light rosy purple, one of the early-flowering section.

— Cyclone.

Lilac, shading to white eye; a distinct and new color. Dwarf.

— Erckmann-Chatrain.

Deep, amaranth purple, white eye. Dwarf.

— James H. Laing.

Salmon rose, shaded with violet. Dwarf.

— Leonnec.

Magenta salmon, carmine center. Dwarf.

Phlox, Miss Lingard. *J. W. Manning, Reading, Mass.*
Pure white, with distinct lavender eye. Tall, cylindrical spike. A constant bloomer; one of the early-flowering section.

— Mons. Rafarin.
Amaranth red; self. Dwarf.

— Mrs. Laing.
Light pink, carmine eye. Dwarf.

— Panama.
Pure white; immense flower and truss. Dwarf.

— Robin.
Dark rose; self.

— Snowflake.
White. Dwarf.

— Thos. Swanston.
Crimson; self. Dwarf.

— Wm. Kirpatrick.
Rosy purple, large distinct eye. One of the early-flowering section.

— Adsurgens. *Pilkington & Co., Oregon.*
A trailing species, with evergreen leaves and handsome rose-colored flowers in spring. Native

— Douglasii var. diffusa. *Pilkington & Co., Oregon.*
Grows in diffuse mats, with many pink flowers, in spring. Native

— Drummondii, Black-brown. *Henderson.*
A black-brown color, of the large-flowering section.

— Drummondii var. semipleno. *Currie Bros., Milwaukee.*
A strain of semi double phlox, containing many new and beautiful tints, such as pale pink, yellow, rose marbled rose and violet purple, besides the usual colors—white, scarlet, purple.
[Phlox, 17 varieties].

Pink (Scotch), Mount Hood. *John Briggs, Albany, Oregon.*
A seedling from Snow, but of larger and better form, with a much stronger perfume.

Polemonium carneum. *Pilkington & Co., Oregon.*
12 to 20 inches in hight, bearing light rose-colored flowers an inch in diameter in summer. Native.

— pauciflorum. *Manning.*
Tubular, cream-colored flowers, and showy compound foliage.

Poppy, Brilliant. *James Vick's Sons.*
Flowers having the petals fringed, and presenting a variety of bright colors; these are pure white, white with a pink tinge, scarlet, rose, purple and other shades. The ends of the petals or fringes are fre-

quently of a deeper tint than the rest, and are so beautifully blended and bright as to be almost dazzling to the eye. Round as a ball and perfectly double.

Poppy, Cardinal. *Dealers.*

This is distinguished by its very dwarf, compact and robust habit. The plant grows about 18 inches high, producing 10 or 12 exceedingly large and extra double flowers, of a brilliant scarlet color on white ground, which contrast strikingly with its dark green foliage. It continues to bloom much longer than any other double annual variety. From Europe.

— Elegans (Papaver orientale). *Manning.*

Orange vermilion, often with blotches of black.

— Empress of China. *Henderson.*

The flowers measure 4 to 5 inches across, are pure satiny white, with a distinct feathered margin of scarlet. The plants grow about 2 feet high. Single.

— Little Prince (Papaver orientale). *Manning.*

A miniature form, with smaller flowers of an intense scarlet.

— Prince of Orange (Papaver orientale). *Manning.*

Dwarf compact habit; flowers orange-scarlet throughout.

— Rosebud. *Iowa Seed Co.*

Somewhat larger than the Shirley, but its distinctive feature is the shape of the unopened buds, which are mossy and shaped like a rosebud. All colors are finely marked and tinted.

— Tulip (Papaver glaucum). *Dealers.*

This annual is a native of Armenia. The plant grows from 12 to 14 inches high, and produces from 50 to 60 large flowers, fine in form and in color of the most vivid scarlet. The intensity and brilliancy of color remind one of the well-known Scarlet Duc Van Thol tulip, hence the name, "Tulip Poppy." It is specially suited for the formation of brilliant masses of color, or for imparting brightness to some more somber plants.

Potato, American Wonder. *E. H. Vick. James Vick's Sons.*

In habit of growth the vines are strong and branching, somewhat resembling that of the Peachblow; foliage of a rich dark green color, floriferous in habit. The tubers are white, large and uniform in size, elongated, slightly compressed, with few eyes that are nearly flush with the surface. In quality, best; the nearest approach to a blight and rot-proof potato of any potato offered

— Early Norther. *Geo. W. P. Jerrard, Caribou, Me.*

A seedling from the Early Rose. In shape, color and season of ripening it very closely duplicates its parent, though in point of yield it nearly doubles that sort. It is in fact a new Early Rose, which is every way as good and as early, and possibly more productive, than the old ever was.

Potato, Early Wisconsin. *Currie Bros., Milwaukee.*

It is a very large yielder in light, sandy soils, and very early. It is also an excellent keeper. It resembles Beauty of Hebron in many respects, only that it is rose-colored, and a much heavier yielder. The tops are stout and short, and the tubers are easily dug.

— Milwaukee. *Currie Bros.*

Resembles Crown Jewel in appearance, but is of larger size and superior quality. It is a strong grower, and comes into use fully as early as Early Sunrise, yielding, however, a much larger crop than that variety, and has the further merit of being a first-class keeper, and remains in good condition without sprouting until very late in the season.

— Molly Stark. *Ford & Son.*

Very early; oval or oblong, flattened oval, skin very light flesh-color, finely netted, eyes plenty, compound, slightly sunken, with a distinct brow; size medium, and remarkably uniform in shape, of handsome appearance; flesh very white and mealy, in quality unsurpassed. Vines short but stout. Originated by D. C. Hicks, of Vermont.

— Mount Carbon. *Ford & Son.*

Medium; shortened oval, skin white, thickly netted, with the slightest tint of pink to the eyes, which are but few, and even with the surface; size large to very large, and remarkably productive. Originated near Mount Carbon, Colorado. A seedling of the Magnum Bonum fertilized with the White Elephant. Dr. W. W. Smith, seeing a load of these fine potatoes on the market at Denver, got a single tuber, which he sent by mail (paying 50 cents postage, therefore it weighed about three pounds) to his father in Avery, O., from which we obtained our first seed.

— Nebraska Seedling. *Delano Bros., Lee Park, Neb.*

This second early potato, originated in Nebraska. Shape round and flattened, with a tendency to elongate; color white, eyes raised; cooks very mealy, and a good keeper. Vines hardy and of vigorous growth, covering the ground well.

— Nebula. *Livingston.*

This potato originated with D. C. Klingler, of Hardin county, Ohio. It is a seedling of the Early Rose, crossed by the Early Ohio six years ago, and the only one out of 40 varieties. It is a strong grower, very early, of good quality, a heavy cropper, and well liked by every one.

— Restaurant. *Henderson.*

Of large size, is an enormous yielder, and of excellent quality.

— Rochester Rose. *Henderson.*

The Rochester Rose is a seedling of Early Rose, and is an improvement in every respect. It will average larger in size, is equally early, and is a much heavier yielder. It possesses the same cooking qualities as the parent.

Potato, Satisfaction. *Currie Bros.*

About the same time as Early Ohio in earliness. In some respects it resembles Early Thorburn, only the tubers are more inclined to roundness. It yields most abundantly, and its cooking qualities are the very best.

— Snowdrop. *Henderson.*

A potato for private use, as it is not a large yielder, but of beautiful appearance and excellent quality, always baking dry and floury.

— Snowflake Junior. *Currie Bros.*

This potato resembles the old Snowflake in appearance and in cooking qualities. It is, however, much more prolific, and has the further merit of being the nearest bug-proof of any potato. It is handsome in appearance, grows to a large size; clear white, cooks evenly and mealy.

— Stanley. *Dealers.*

Seedling of Early Rose, and six days earlier.

— Statesman. *J. A. Everitt Seed Co.*

The Statesman potato originated in Illinois. It is very early, productive, excellent for the table and market.

— Variegated. *Childs.*

Leaves variegated with yellow and green, the yellow predominating.

— Wisner's Earliest Known. *J. H. Wisner, Port Elgin, Ont.*

[Potato, 17 varieties.]

Potentilla. Double Hybrid. *Manning.* Nine varieties:

— Bicolor plena.

Orange and vermilion.

— Cardinale.

Brilliant cardinal.

— Emile.

Bright, bronzy red.

— Gloire de Nancy.

Clear, deep yellow.

— Jeane Salter.

Orange, shaded scarlet.

— Perfecta.

Maroon, shaded lemon.

— Purpurea lutea pl.

Purple and yellow.

— Purpurea.

Deep purple.

— Victor Lemoine.

Vermilion, striped yellow.

Potentilla Hopwoodiana. *Manning.*

A hybrid, with flowers showily marked with deep rose in center, shading to white at edge.

— Thurberii. *Manning.*

A western species, with brilliant red flowers. 2 feet. Native.

Primrose, Mexican. *Childs.*

A trailing plant, about 10 inches high, with silky flowers in various shades of red.

Primula officinalis var. duplex. *Manning.*

The calyx assumes the color of the corolla, giving the appearance of a flower within a flower.

Pteris tremula var. Smithiana. *Dreer.*

A beautiful crested form of Pteris tremula. A useful fern for growing into specimen plants.

Pycnanthemum vulgare. *Manning.*

A dense bush or herb, with aromatic foliage and terminal heads of white or pinkish flowers. 2 feet.

Quercus densifolia. *Pilkington & Co., Oregon.*

A large, round-headed evergreen oak of great beauty. Native.

Quince, Columbia. *Parry.*

Seedling of the Japanese quince (Pyrus Japonica). Shaped like a Bellflower apple; 9 to 12 inches in circumference, greenish yellow with handsome blush; surface ribbed and covered with small white dots; vrey fragrant; excellent for culinary purposes.

Radish, All Seasons. *James Vick's Sons.*

A new variety of the China Round Winter radish. It may be sown at intervals from spring until autumn, and the roots obtained from late sowings can be kept in storage for winter consumption. This radish requires only 6 to 8 weeks for its development, and like the old China Winter sort, is much hardier than other varieties. The root is round, of a brilliant scarlet color; flesh pure white, and of a most agreeable and mild flavor.

[An All Seasons radish is listed in ANNALS for 1889, p. 135. I do not know if the two are the same.—*L. H. B.*]

— Long Brightest Scarlet White-tipped. *Dealers.*

Tops small, roots very bright colored and uniformly smooth and well formed.

— Long Cardinal. *Burpee.*

Regular, smooth and conical; in size it is intermediate between the long and half-long sorts; the most fiery scarlet, slightly tipped with white at the ends of the roots; the flesh is crisp, tender, and of the finest quality.

— Maule's Earliest White Turnip. *Maule, Philadelphia.*

It is identical, except in color, with Maule's Earliest Scarlet. It has a small top, and its pure white flesh is at all times very crisp and tender; frequently matures in less than three weeks from sowing.

Radish, Paris Bright Scarlet Long. *Farquhar, Boston.*

Long, tapering root of bright scarlet, with clear white tip.

— Round Scarlet China. *Thorburn.*

A hardy form of the China radish, which matures in six or eight weeks. Round, rich scarlet, with pure white flesh. Can be grown as summer or winter radish. From Europe.

— Veitch Scarlet Turnip. *Farquhar, Boston.*

Perfectly round, with very small tap root, scarlet, white-tipped

Raspberry, Babbitt. *W. R Laughlin, College Springs, Iowa.*

Blackcap.

— Champlain. *Ellwanger & Barry.*

A yellow variety, which originated from seed of White Antwerp. It resembles its parent in color and size, but is a stronger grower and more prolific. In quality it ranks as best, and is superior to Caroline or Golden Queen. Particularly valuable for the amateur.

— Golden Alaska. *Salzer, 1891.*

A golden yellow berry of great size and excellent quality, said to have been "found in one of the valleys in Alaska."

— Hannibal. *W. J. Bradt, North Hannibal, N. Y.*

Blackcap.

— Hiram. *W. J. Bradt, North Hannibal, N. Y.*

Red.

— Pride of Kent. *R. S. Edwards, Highlands, Col.*

Berries firm, not so juicy as the Turner, but a good shipper, and prolific. First ripe berries about July 6, hanging in bunches of 6 or 7 berries, and continues blossoming and bearing until October, unless killed by frost. Growing beside Turner, Clark and Cuthbert, the Pride of Kent is more productive than either. The cane grows very stout and tall, often 6 and 7 feet high; the bark is yellow, canes are covered with short prickles or thorns; the foliage is deep green; the edge of the leaf is toned with red, similar to the Gladstone; the berries when ripe are a beautiful bright red and delicious in quality. Originated a few years ago by Mr. Fallstaff, of Kent, England. About five years ago Mr. Henry King, a well known gardener of Jefferson county, Colorado, while on a visit to England, bought 100 of the plants and brought them to Colorado. Eighteen months after my attention was called to it.

— Superlative. *Ellwanger & Barry.*

A foreign red raspberry, very large and of best quality. Its size, appearance and flavor commend it to all who desire large, handsome and choice fruit.

— Wade. *Albertson & Hobbs, Brigdeport, Ind.*

Fruit nearly as large as Gregg, black, firm and superior in quality. An ironclad, productive. Ripens about with Souhegan. This blackcap originated on the farm of John Wade, in Fountain county, Ind., about 10 years ago.

Rhamnus imeretinus. *W. C. Strong, Waban, Mass.*

A strong-growing variety of buckthorn, with large rugose, deep green, polished leaves, which are very distinct and ornamental.

Rheum undulatum. *Manning.*

Handsome ovate-cordate foliage, with wavy margin. Flowers in a monstrous open, leafy, compound spike. 5 feet. China.

Rhododendron occidentale. *Pilkington & Co., Oregon.*

A fine species, with large trusses of white and yellow fragrant flowers in summer. Native.

Robinia hispida, var. rosea. *Harlan P. Kelsey, N. C.*

Rosa Wichuriana. *W. C. Strong, Waban, Mass.*

"This is a distinct and most valuable variety from Japan, introduced into this country by way of Germany under the misname of bracteata. But it proves to be very different and far more desirable and hardy than the R. bracteata from southern China. It is a low, trailing species, its stems creeping on the earth almost as closely as an ivy, for a distance of 10 to 15 feet in a single season, or even more if trailed as a single shoot, and forming a dense mat of very dark green and lustrous foliage. The leaves are composed of one, three, five, seven or nine smooth, shining leaflets. There are no prickles. The flowers are produced in greatest profusion, in clusters, on the ends of short branches, after the June roses are past, from the first week in July throughout the month, and sparingly for the rest of the season. They are pure white, the stamens being yellow, from 1½ to fully 2 inches across, and having the strong fragrance of the Banksia rose. It is quite hardy, with the exception of its latest immature growth, which may be cut back to some extent, but leaving an abundance of wood for free flowering. This has proved to be an invaluable plant for covering banks, rockeries, slopes and beds among shrubs, and generally for use in cemeteries. Its handsome evergreen looking foliage, its beautiful white flowers, which come after most other roses are past, and its admirable habit of matting, render it a most valuable acquisition." (Strong.)

Advertised by Mr. Strong in the summer of 1891. See *Garden and Forest*, iv. 44, 570. fig. 89 (1891).

Rose, Augustine Halem. *E. G. Hill & Co., Richmond, Ind.*

This is like Marie Baumann in form, color and shape, but produces flowers with the freedom of a Tea. Color dark crimson A beautiful, free flowering rose, and very fragrant. Hybrid Tea. Imported.

— Berthe Clavel. *Hill.*

A striped sport from old Souvenir de la Malmaison. Color cream white, with rose center; reverse of the petals striped with violet and light rose. Bourbon. Imported.

— Capitaine Basroger. *Hill.*

Bright carmine crimson, shaded with blackish purple. Very large, and of fine globular shape. Very free flowering. From Moreau-Robert, near Angers, France. Moss. See ANNALS for 1890, 46.

Rose, Champion of the World. *Childs.*

A deep, rose pink flower, darker than Hermosa. A perpetual bloomer, and hardy. Originated by Geo. W. Woodhouse, Rutland, Vermont.

— Commandante de Lamalignie. *Dingee & Conard Co., West Grove, Pa.*

Globular flowers, extra large size, very full and beautiful; color rich, carnation red, elegantly flamed with scarlet; very fragrant Hybrid Perpetual. From Moreau-Robert, France. See ANNALS for 1890, 47.

— Crimson Globe. *Hill.*

The growth is bold, the leafage ample, and the flower of large size, globular in form, and quite full, producing bloom in large clusters; color rich, glowing crimson. Hybrid Moss. Wm. Paul & Son, England.

— Danmark. *Hill.*

A seedling from La France, introduced from Denmark. This has all the good qualities of its parent, but is different in form and shape; looks more like a finely-built Hybrid Perpetual. A strong, vigorous grower, producing flowers as freely as La France. Hybrid Tea.

— Dawson. *W. C. Strong, Waban, Mass.*

This rose is a true hybrid, obtained by Mr. Jackson Dawson, of the Arnold Arboretum, near Boston. It is a cross between two quite distinct species, an absolutely hardy form of the Japanese multiflora and the well known General Jacqueminot, the latter being the pollen parent. It was first exhibited February 1, 1890, as a pot-plant before the Massachusetts Horticultural Society, and at once attracted marked attention as "a miniature rose of deep pink color, quite full and very fragrant," receiving a first-class certificate. Mr. Dawson again exhibited the same plant in a ten-inch pot in March, 1891, which had nearly 700 hundred "bright pink flowers of great beauty and exceedingly fragrant." It has a slight climbing habit.

— Edouard Littaye. *Hill.*

A strong, vigorous rose, after the general style of Madam Cusin. Flowers most abundantly; buds large, long, and of fine shape, full and double when open; color rosy carmine, tinted light pink, often shaded with violet pink. Tea. French.

— Elise Heymann. *Hill.*

A vigorous, free flowering rose, producing quantities of medium sized flowers; color light yellow, shaded with nankeen yellow, center rosy peach. Tea. French.

— Frere Marie-Pierre. *Hill.*

Seedling from Baroness Rothschild, having both the habit and foliage of its parent. Flowers very large and double, produced singly; color beautiful china rose. Hybrid Perpetual. French.

— General Berge. *Hill.*

Strong, vigorous growth, producing large, finely formed flowers of exquisite shape. Brilliant currant red, shaded silvery maroon, very fragrant and free flowering. Hybrid Perpetual. French.

Rose, George Coote. *John Briggs, Albany, Oregon.*

H. P. seedling from Louis Margottin. Plant of a vigorous habit; leaves bright green and large; flower globular, bright crimson; petals of good substance; blooming season, early to very late; free from mildew. More vigorous than W. Lund (which see).

— Grand Duchess Hilda. *Hill.*

Moderate in growth, but vigorous enough to produce nice flowering wood. Flowers have large outer petals; color nankeen yellow, with ochre center. Tea. French.

— H. Plantagenet. *Hill.*

Brilliant china rose in color, with deeper shadings. A moderately good grower, producing abundantly of well-formed flowers. Hybrid Tea. Imported.

— Jaune Nabonnand. *Dingee & Conard Co.*

Solid, rich chamois yellow, center sometimes delicately shaded with coppery rose; very fragrant; a strong grower. Tea. Nabonnand & Sons. See ANNALS for 1890, 51.

— Joseph Degueld. *Dingee & Conard Co.*

Color rich, ruddy crimson, beautifully lightened with fine vermilion red; very handsome and fragrant; the flowers are extra large and of great depth and sweetness, having somewhat the form and fullness of the Centifolia or Hundred-leaved rose; the bush is a strong, vigorous grower and good bloomer. Hybrid Perpetual. Soupert & Notting, Luxemburg. See ANNALS for 1890, 46.

— Kaiserina Augusta Victoria. *Hill.*

A German variety; color pure ivory white. A large, full flower, magnificent in bud; stems long and bearing large, strong canes, with handsome foliage. Hybrid Tea.

— Lady H. Grosvenor. *Hill.*

Flowers flesh-color, large, full and globular. Raised by the late Mr. Henry Bennett, who esteemed it highly. The stock of this rose was disposed of to Wm. Paul & Son, who are now distributing it. Hybrid Tea.

— Madame A. Veysset. (Striped La France.) *Hill.*

Identical in every respect with its parent, La France, except in two particulars—it is much stronger in growth, and the flowers are beautifully striped and shaded with a delicate white. The coloring is exquisite. It forces freely. Hybrid Tea. Imported.

— Madame Edouard Michel. *Hill.*

A rose after the style and growth of Madame Luizet, but of a clearer and brighter color, with more regularly formed petals. Hybrid Perpetual. French.

— Madame Louis Patry. *Hill.*

Strong and vigorous; flowers large and well made, globular in form; color deep purple rose, shaded with brilliant china rose in the center; very floriferous. Tea. French.

Rose, Madame Pernet-Ducher. *Hill.*

A well formed bud, long and of a distinct shape and form; color a light canary yellow. The first distinct Hybrid Tea. Strong, robust growth. French.

— Madame Veuve Menier. *Hill.*

A strong grower, producing buds in great profusion. Pale, light rose, flower of good size, double, and very free flowering. Hybrid Tea. French.

— Margaret Dickson. *Hill.*

This rose is almost a pure white in color, strong in growth, and quite free flowering. The finest hybrid rose of recent years. Sent out by Alex. Dickson & Sons, of Belfast, Ireland. Winner of the gold medal for best new rose at National Rose Society's show in England. Hybrid Perpetual.

— Marion Dingee. *Dingee & Conard Co.*

Raised from seed of Countess de Casserta, crossed with Duchess of Edinburgh. The Casserta blood is shown most in its foliage and habit of growth, while the flowers have much of the brilliant coloring and somewhat the form of Duchess of Edinburgh, but are altogether different and much more striking. Marion Dingee is a strong, vigorous grower, with large, thick, deep green leaves; the flowers are large, beautifully cup-shaped, moderately full, and borne in profusion all through the growing season; the flowers are borne nearly upright on long straight stems, and are of excellent substance, having thick, leathery petals, which hold their form and color for a long time; the color is deep, brilliant crimson, one of the darkest, if not the very darkest and richest colored Tea rose.

— Medea. *Hill.*

Flowers bright lemon yellow, with canary yellow centers; very full buds, with high centers; foliage dark and thick, in color like Perle. This variety produces most of its buds of immense size, and very double. Texture firm and heavy. Tea. Wm. Paul & Son.

— Miss Wenn. *Dingee & Conard Co.*

A clear coral pink, a most novel and distinct shade of color very difficult to describe. The French call it china pink. Large, very double and full, and exquisitely tea scented. Tea. Guillot & Sons, France. See ANNALS for 1890, 44.

— President Carnot. *Hill.*

Color bright rose, shaded silvery carmine. Hybrid Perpetual. French.

— Princesse de Sarsina. *Dingee & Conard Co.*

Fine flesh-colored rose of good form and substance; base of petals finely tinged with apricot yellow, center shaded rich, peachy red. Tea. Soupert & Notting, Luxemburg. See ANNALS for 1890, 45.

— Salamander. *Hill.*

Flowers bright scarlet crimson, very vivid in summer, and a free autumnal bloomer. Hybrid Perpetual. Wm. Paul & Son.

Rose, Senateur Loubet. *Hill.*

Dwarf but vigorous; very large, finely formed flowers; outer petals light, tender rose, center metal yellow color, heightening sometimes to crimson. Very free flowering. Tea. French.

— Spenser. *Hill.*

Flowers beautiful satin pink, the outer petals shaded and reflexed with white. Hybrid Perpetual. Wm. Paul & Son.

— W. Lund. *John Briggs, Albany, Oregon.*

H. P. seedling from Louis Margottin. Vigorous in habit; leaves dark green and dull; flower medium in size, dark red, shading to crimson; flat in form; a fall bloomer.

— Zenobia. *Hill.*

Flowers fine satin rose color, very soft and pleasing; buds finely mossed, and exceedingly fragrant. Moss.

[Roses, 36 varieties.]

Salix, Vernost Russia. *Manning.*

This is a most brilliant golden-barked tree, much more brilliant in color than the Golden-barked Willow (Salix alba var. vitellina). All the branches are of the most intense clear yellow, with tips inclined to red. A tree of vigorous growth, and especially adapted for distant winter effects of its bark in connection with other trees, and equally as well adapted for use wherever a large tree of rapid growth is desired.

Probably the same as the Russian Golden Willow offered by some dealers.

Salvia, Wm. Bedman. *Henderson.*

A compact bush, completely covered with rich scarlet flowers.

Saxifraga occidentalis. *Pilkington & Co., Oregon.*

A dwarf species 3 to 6 inches high, with fine clusters of white flowers in early spring. Native.

Schizanthus pinnatus var. niveus. *Pitcher & Manda.*

A pure white schizanthus. It is true that white flowers have been produced by Schizanthus pinnatus var. albus and Schizanthus grandiflorus var. albus, but the former are spotted with blue and the latter with yellow.

Senecio Japonica, or Erythrochæton palmatifidum. *Manning.*

Very deeply cut foliage. Flowers deep orange yellow, on a towering, leafy spike. 3 feet

Sidalcea spicata. *Pilkington & Co., Oregon.*

Dense spikes of rose-colored small flowers in June. Native.

Spinach, New Catillion Long-Standing. *Farquhar, Boston.*

Particularly valuable during our long summer weather, when most varieties of spinach run up to seed, and are useless. It strikes its roots deep into the soil, and remains for weeks tender and good as in the earlier season.

Squash, Cook's Favorite. *Dreer.*

The skin is of a rich cream color. It attains a length of 20 to 30 inches and 6 to 9 inches in diameter; a vigorous grower, very prolific; flesh deep orange, extra fine grain; superior for table use, for pies or canning, and excellent for dairymen to feed to milch cows.

— Der Wing. *Burpee.*

"Several years ago, in connection with a plantsman, we sent an agent (a native Chinaman) to travel through the interior of China collecting seed of vegetables and flowers which he might discover and which we could grow in America. The majority of these, on testing at Fordhook Farm, proved to be undesirable for American gardens. One of the new squashes, however, which we have named 'Der Wing' in honor of the discoverer, proved be to very distinct from any other we have ever seen. The squash grows abont 5 inches long by from 2½ to 3 inches thick at the stem end, running to a point at the blossom end. It has a rather hard and thick shell, which is completely covered with warts; the color of the flesh is a very light yellow; the flesh is moderately thick and very sweet when cooked. It is a queer-looking, warty, hard-shelled little squash. It is very productive." (Burpee.)

— Ohio. *Ford & Son.*

Ten to 12 inches in length and 3 or 4 inches thick near the blossom end, tapering somewhat to the stem, and slightly curved, just the right size for baking whole. The color before ripe is very dark green. As it ripens it becomes more or less streaked with bright orange, rendering it very attractive. Shell is thin but very hard and flinty, making it an excellent keeper. Seed cavity very small, few seeds; flesh dark orange yellow, fine grained and of excellent flavor.

"Two years ago one of our patrons in this State sent us a few seeds of this squash, saying: 'It has been growing with a few families for many years in this neighborhood. Do not know where it came from. Have never seen any mention of it in any catalogue.'" (Ford.)

Stachys coccinea. *Manning.*

A low-growing plant, with cordate, hairy foliage, and a succession of pretty, deep orange crimson flowers. 1 foot. Texas, etc.

Stephanandra flexuosa. *Manning.*

A Japanese shrub of dense growth, with very prettily cut, deep, glossy green foliage and pure white, small flowers studded along the branches in late June. Allied to spirea.

Stock (Ten-Weeks), New Imperial. *James Vick's Sons.*

A plant of robust habit, producing long massive spikes of beautiful double flowers of delicate fragrance. Remains in bloom a long time.

— Pure White (Victoria Strain.) *Dreer.*

This is a cross between the Ten-Weeks and the Winter-flowering Stocks, and if sown in spring, the plant commences to flower in the antumn much earlier than any other kind, and continues flowering throughout the winter with but slight protection. The plant is of compact, robust habit, producing profusely from 80 to 90 per cent. of pure white, double flowers.

Strawberry, Dayton. *Matthew Crawford, and others.*

A solid berry, somewhat darker than Crescent and six days earlier, of good form and quality ; very productive ; foliage heavy, protecting the flower from frost. Perfect flowered. A chance seedling on the place of David Feicht, near Dayton, Ohio. Named by the Montgomery County (Ohio) Horticultural Society at its June meeting, 1891.

— Edwards' Favorite. *R. S. Edwards, Highlands, Col.*

The berry is a bright, glossy red outside, and carries its color throughout, and occasionally a berry is found that is a little hollow. The seeds are prominent. Single berries have measured as high as 9 inches in circumference. Fourteen berries filled a "Leslie" quart box, dry measure. The color does not fade after the berries have been picked. The plants are very vigorous, make runners freely, and produce a perfect blossom. The plant comes into bloom several days later than the Jucunda, Captain Jack and Jessie. It is a chance seedling discovered six years ago by the introducer, and is believed to be a seedling from Sharpless and Jucunda.

— Belle of La Crosse. *J. A. Salzer, La Crosse, Wis., 1889* (or before).

— Columbian. *Columbia Strawberry Co., Fruitland, Tenn.*

Originated from an unknown source on the farm of Allen Robertson, western Tennessee. Eight days earlier than Crescent, and larger; fully as productive. Perfect flowered. Fall of 1892.

— Honey. *S. L. Watkins, Grizzly Flats, Cal.*

A prolific, hardy berry, bearing throughout the growing season ; sweet, juicy and aromatic, with perfect flowers. Said to be Fragaria Chilensis.

— General Putnam. *G. H. & J. H. Hale, So. Glastonbury, Connecticut.*

Berries of perfect form, similar to the pointed end of a hen's egg ; size, large to very large, and seldom any small or imperfect berries, 90 per cent. of the whole crop will grade as "extras" ; color a pale scarlet, similar to Cumberland ; mild, subacid flavor ; a strong grower. Pistillate. Originated with John E. Brown, on the old Putnam farm, at Brooklyn Conn.

— Greenville. *E. M. Buechly, Greenville, Ohio.*

Imperfect flowered.

— Leader. *Parker & Wood, and others.*

Large, of good form and color, coloring evenly to the tips ; early ; the stems tall and stout. Perfect flowered.

— Murray. *J. S. Westbrook, Faisons, N. C.*

Imperfect flowered.

Strawberry, Muskingum. *Matthew Crawford, and others.*

Fruit large, obtusely conical, or nearly round towards the end of the season; regular and of good appearance; dark, glossy red; firm. Perfect flowered. Originated with Grant Kearns, Zanesville, O., about five years ago.

— Omega. *Oakley Apgar, Califon, New Jersey.*

Imperfect flowered.

— Porter. *Dr. Porter, Rocky Point, North Carolina.*

— Price. *J. S. Westbrook, Faisons, North Carolina.*

— Princeton Chief. *F. W. Poscharsky & Son, Princeton, Ill.*

A glossy, dark red berry, with solid red flesh; stems high and stout. Perfect flowered.

— Robinson. *B. F. Smith, Lawrence, Kan.*

Offspring of Crescent, fertilized by Downing, by J. G Robinson, Franklin county, Kan. In habit the plant resembles the Crescent, spreading compactly over the g;ound, but its foliage is a darker green. Its fruit is larger than the Crescent. Blossom a strong staminate, more than equaling the Captain Jack in pollenizing properties. It is a week latter than the Crescent, but continues in bearing as long as the latest varieties, while the fruit is larger and of a superior quality.

— Salzer's Perfection. *John A. Salzer, La Crosse, Wis.*

Thrifty and strong; healthy foliage; uniform size of berry; fine form and color; excellent quality of fruit, firm, luscious and melting. It ripens with the Wilson, but continues to bear longer, and is much more prolific.

— Southard. *G. H. & J. H. Hale, So. Glastonbury, Conn.*

Fruit stalks stocky and long enough to hold the fruit well up from the ground; fully as productive as the Crescent, while the fruit will average as large as the Sharpless. The central or first berries on each cluster are round; all others are slightly more conical, very few of rough, irregular shape; color a deep, rich scarlet when heavily shaded with the dense foliage, while with more sunlight it becomes much darker, with considerable gloss. It ripens early, and matures nearly its whole crop inside of 10 days. In flavor it is pleasant, subacid, somewhat like the Downing. Perfect flowered. Originated on the farm of M. Southard, Lakeview, Ohio.

— Swindle. *G. H. & J. H. Hale, So. Glastonbury, Conn.*

In habit of growth somewhat resembles the Glendale, although with rather broader leaves; it is a more vigorous grower than either of its parents, Jersey Queen × Glendale, and makes runners freely; leaf and fruit stalks are long and stout, fruit stalks very abundant and branch freely; fruit ripens late to very late; always large to very large; rich, dark, glossy scarlet color; sprightly, high flavor, somewhat acid, but of excellent quality, firm and solid, and a good shipper; in a general way, both plant and fruit resemble Gandy, only the berries average larger and of richer color. Pistillate. Originated by B. Smalley, Bradford, Vermont.

Strawberry, Victor Hugo. *Oakley Apgar, Califon, New Jersey.*

[Strawberries, 18 varieties.]

Syringa Claude de Lorraine. *Berckmans, Georgia.*

Deep claret, turning to violet. From France.

— Jean Bart. *Berckmans, Georgia.*

Deep rose. Double. From France.

— Léon Simon. *Berckmans, Georgia.*

Very long thyrse. Double. From France.

— Virginité. *Berckmans, Georgia.*

Pale rose. Double. From France.

Tellima odorata. *Pilkington & Co., Oregon.*

Pink flowers, very fragrant. Native.

Thuya. See Biota.

Thymus Corsicus. *Manning.*

Making a mat of glossy foliage, sprinkled with minute blue flowers. Europe.

— lanuginosus. *Manning.*

Foliage purple, form a dense covering of hairs. Flowers light blue. 2 inches.

— montanus var. albus. *Manning.*

A creeping plant, forming mats of fine foliage, and producing broad, showy sheets of pure white flowers.

Tigridias, Blue, Pink, Lilac, White, Yellow, Red. *A. Blanc, Philadelphia.*

Tomato, Baltimore Prize-Taker. *Landreth.*

A large, apple shaped tomato, smooth, solid, ripening all over, without core; color red, with slight purple tint; very productive.

— Belmont. *Breck.*

The fruit, which is of average size, does not crack, and is borne in clusters of 4 or 5, is perfectly round, solid, free from rot and bright scarlet in color. It has a good flavor, few seeds, no core, and remains firm a long time when ripe. The vine is of vigorous growth, and very prolific. Found in a patch of Paragon, at Belmont, Mass.

— Early Michigan. *Ferry, Detroit.*

The same as Early Red Apple, which was introduced in 1889.

— Early Red Apple. *D. M. Ferry & Co., Detroit, 1889.*

An extra early, smooth tomato of medium size and best quality. Introduced in 1892 as Early Michigan. (See preceding Introduction List.)

— Early Vermont. *O. H. Alexander, Charlotte, Vt.*

Cross of Trophy and Essex, and earlier and more perfect in form than either parent; size and color of Trophy.

Tomato, Gold Ball. *Livingston.*

A spherical, golden yellow fruit, of medium size and extra good quality.

— Maule's Earliest of All. *Wm. Henry Maule, Philadelphia.*

A very early red, somewhat irregular tomato, said be to 3 to 5 days earlier than any other variety.

— Money Maker. *Landreth.*

Foliage silvery and large. Fruit borne in bunches, red, flattened, slightly irregular in form. It has an elasticity of character of fruit fitting it for long shipments. Very early.

— Picture Rock. *Childs.*

Fruit bright scarlet, of fair size, and it commences to ripen its fruit very early, and continues in bearing until frost. Ripe fruit picked from the vines has been kept in perfect condition for 3 to 4 weeks during warm, summer weather. It originated in the Picture Rock region of Wisconsin.

— Plentiful. *A. D. Perry & Co., Syracuse, N. Y.*

Large, dark red, of good flavor. Weighs 64 lbs. to the bushel. From England.

— Royal Red. *Livingston.*

A large, red, handsome variety.

— T. T. T. or Ten Ton Tomato. *Landreth.*

Fruit deep red, large, round, half flat, smooth as an apple, free from green core or other imperfections; 20,000 lbs. or 10 tons to the acre, can readily be grown on any good tomato soil.

— Vermont Beauty. *Alexander.*

Cross of Mayflower and Laxton's Extra Early. Very early, bright red, solid.

[Tomato, 12 varieties.]

Tropæolum Lobbianum, Bismarck. *Dreer.*

It grows to a height of 5 to 7 feet, and is covered from June to October with the brightest scarlet flowers imaginable, contrasting richly with the small, pale, pea-green foliage. Imported.

Turnip, Dixie Land. *Landreth.*

A new form of turnip for winter greens, destined to supercede the Seven Top, being more hardy, as productive of leaf for winter greens, with additional advantage of producing a large white root.

— Early Ivory. *Childs.*

Very early. It grows almost as quickly as a radish, and to a great extent resembles a large white winter radish. It is sweet, and in every respect of first-class quality.

— Southern Prize. *L. R. Wyatt, Raleigh, N. C.*

Large, globular, pointed, purple above; strong, broad foliage, and suits southern climate better than any other. Not strictly new, as it was introduced here by I. H. Ennis, of *North Carolina Farmer*, several years ago, but it has never been put upon the general seed trade before. (Professor Massey.)

Vaccinium ovatum. *Pilkington & Co., Oregon.*

An evergreen species, with showy flowers and fine green leaves. Native.

Vancouveria hexandra var. aurea. *Pilkington & Co., Oregon.*

Leaves evergreen and the flowers golden yellow. Native.

Veratrum Californicum. *Pringle & Horsford, 1883. Pilkington & Co., Oregon, 1892.*

A showy plant for moist places, 2 to 6 feet high, with large leaves and a long panicle of white, bell-shaped, drooping flowers in summer, succeeded by ornamental pods. Native.

Verbesina Siegesbeckia. *Harlan P. Kelsey, N. C.*

Bright yellow, fall bloomer. Native.

Veronica spicata var. rosea. *Manning.*

A pink-flowered variety, producing showy flowers over a long blooming season in early autumn.

Vesicaria (or Alyssum) sinuata. *Thorburn.*

An early flowering yellow annual from Spain.

Viola adunca. *Pilkington & Co., Oregon.*

A fine species, with entire leaves, and a great abundance of blue flowers in spring. Native.

— Hallii. *Pilkington & Co., Oregon.*

Six inches high, with finely cut leaves and blue and white flowers in spring. Native.

— palmata var. laciniata. *Harlan P. Kelsey, N. C.*

Native.

— trinervata. *Pilkington & Co., Oregon.*

Four to 6 inches high, with divided leaves and blue and purple flowers. Native.

Violet, Double Russian. *Dreer.*

Perfectly hardy, double blue violet, deliciously fragrant, deep in color, and very free flowering.

Watermelon, Girardeau's New Favorite. *Maule, Philadelphia.*

It resembles Florida Favorite closely in shape, marking of rind, and color of seeds; the latter are smaller, and fewer are found in the melon. It almost doubles it in size; the flesh is bright red, crisp and deliciously sweet. Both ripen about the same time. Has weighed 60 and 70 lbs. to the melon. Originated in Florida by Girardeau.

— Kansas Stock Melon. *F. Barteldes & Co., Lawrence, Kan.*

This melon was entered in ANNALS for 1891, p. 213, but the name of the variety was inadvertently omitted.

Watermelon, Lone Star. *Richard Frotscher, New Orleans.*

This melon is above medium, and very uniform in size; a prolific bearer, oblong in shape; the rind is of a mottled green and black color, somewhat like the Rattlesnake, but of a darker green. The flesh is of a deep red color, solid, crisp and very sweet. This melon was brought from Texas by Mr. Nat. Henderson, of Iberia parish, La. 1891.

— Rocky Ford. *F. Barteldes & Co., Lawrence, Kan.*

This melon is considered one of the best for the plains climate. Of large oval shape, and thin rind, which is very tough, and will stand any amount of rough handling. The flesh is bright red, and of excellent flavor. Largely grown around Rocky Ford, Col., for shipping purposes.

This variety has been sold locally for some time, but does not appear to have been put upon the general market before.

— Salzer's Defiance. *Salzer.*

A round, white-skinned variety, somewhat resembling the well known Russian Volga, but said to have come originally from China. It is extremely hardy and productive, and thrives well in the north; flesh pink and of delicious flavor; rind thin, but very tough and hard.

— Jones. *Henderson.*

The color of the skin is solid green, and the flesh is a very bright red, particularly sweet, juicy and melting. It grows to a large size, frequently attaining the weight of 80 lbs. In shape it resembles Kolb's Gem, and like that variety is one of the best shipping sorts. Grown by Philip S. Jones, of Georgia.

— Turkish Dwarf. *Livingston, and others.*

This melon is of Turkish origin. Some 5 years ago Dr. Harris, of Philadelphia, distributed a few seeds, which he procured from Turkey. It is early, and the vines are of dwarf habit, allowing it to stand at least one-third closer than ordinary sorts. The quality is excellent.

Willow. See Salix.

Zinnia, Dwarf Double Variegated Foliage. *Dealers.*

A variety of the Zinnia elegans fl. pl. class, of elegant habit, and producing large, well-filled, and brightly-colored flowers. The foliage is beautifully striped in gold, and spotted, flamed and marbled, making it an excellent decorative plant. Known also as Dwarf Double-Striped Foliage zinnia. From Europe.

AMERICAN KITCHEN GARDEN VEGETABLES.

The following varieties should be added to the Catalogue of American Kitchen Garden Vegetables (ANNALS FOR 1889, 106). They were in cultivation in America in 1889.

- BEAN—
  - Advance (Carter's White Advance).
- CABBAGE—
  - German Drumhead (Royal German Drumhead).
- CAULIFLOWER—
  - Kronk Erfurt (Kronk's Perfection Erfurt).
- CELERY—
  - Giant White (Salzer's Giant White).
  - Standard Bearer (Carter's Red Standard Bearer).
- CUCUMBER—
  - Astra (New Astro).
  - Bonneuil (Large White Bonneuil).
  - Ferry Prolific (Ferry's Prolific).
  - Milwaukee (Currie's Milwaukee Pickle).
  - Salzer Prolific (Salzer's Prolific Pickle).
  - War Club.
  - White German.
  - White Japan.
- KOHL RABI—
  - Imperial (Improved Imperial).
  - White Forcing (Early White Forcing).
- LETTUCE—
  - Saunders.
  - Sunlight (Salzer's Sunlight).
  - Tennis Ball Black-Seeded.
- PARSNIP—
  - Market Model.

§ 2. *Inventory of North American Apples.*

COMPARATIVE RECORDS OF THE PROGRESS OF APPLE CULTURE IN NORTH AMERICA DURING THE CENTURY, AND A STATEMENT OF ITS PRESENT EXTENT AND DISTRIBUTION.

In two preceding volumes,* attempts have been made to collect data for a statistical measure of the elements of American horticulture. What was there attempted for the kitchen garden vegetables and the native plants is now undertaken for the apples; and that some general view of the progress of variation in the apple may be obtained, I have added comparative lists of earlier dates. I have taken four main standpoints for the review of the subject: 1. The list of M'Mahon, which is the first considerable list with which I am acquainted. 2. The list of Coxe. 3. Two lists of the Downings, which were the first and second attempts to catalogue all the varieties on the continent. 4. A survey of the contemporary varieties. The entire catalogue I submit as a record, upon which the statistician, or those who are interested in the profounder tendencies in cultivated plants, may found various curious and interesting calculations. The lessons which can be drawn from a numerical study of such lists are very many; but aside from this ultimate value which I hope some skillful pen may at some future time derive from it, the list will serve a purpose in showing how many apples are now in cultivation and where they are most prized, and what names have already been applied to them and which should not be duplicated for new varieties.

I. M'MAHON'S LIST, 1806.

Bernard M'Mahon made a list of apples which he could recommend, in his *American Gardener's Calendar*, published in 1806 at Philadelphia. This list contains 59 varieties (the Newtown Pippin having been mentioned twice). It is impossible to identify most of these apples with the names current at the present day; but I have made an attempt to give the names—in parentheses—by which they are known in our books. I have also endeavored to add the origin of the varieties. M'Mahon's is the earliest American apple list of consequence, and it has great value in any comparative study of the procession of fruits.

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* Catalogue of American Kitchen Garden Vegetables, Annals for 1889, 106–140. Census of Cultivated Indigenous Plants, Annals for 1891, 216–275.

Summer Apples—

Ginetting, or Juneateing (White Juneating). Eur.
Early Harvest (Early Harvest). Am.
Eve Apple (Early Red Margaret ?). Eur. ?
Summer Queening (Summer Queen). Am.
Margaret Apple (Early Red Margaret). Eur.
King Apple. ?
Bow Apple (Sweet Bough). Am.
English Codlin (Old English Codlin). Eur.
Sweet's Harvest. ?
Woolman's Harvest (Summer Rose). Am.

Autumn and Early Winter Apples—

Golden Pippin. ?
Summer Blush. ?
Queen Apple. ?
Summer Pearmain (Summer Pearmain ?). Eur. ?
Lemon Pippin (Lemon Pippin). Eur.
Fall Pippin (Fall Pippin). Eur.
Autumn Pearmain (Autumn Pearmain).
Shippen's Russet (Shippen's Russet). Am.
American Pippin (American Pippin ? ?). Am. ?
Burlington Pippin. ?
Golden Rennet (Golden Reinette). Eur.
Aromatic Pippin. ?
Sheep's Snout. ?
Scarlet Pearmain (Scarlet Pearmain). Eur.
Orange Apple. ?
Vandevere (Vandevere). Am.

Long-Keeping Apples—

Newtown Pippin (Newtown Pippin). Am.
Newark Pippin (Newark Pippin). Am.
Priestly's Apple (Priestly). Am.
Jersey Greening (Ortley ?). Am. ?
Monstrous Pippin (Gloria Mundi). Am.
English Nonpareil (Nonpareil). Eur.
American Nonpareil. ?
Doctor Apple (Doctor ?). Am. ?

Long-Keeping Apples—

Everlasting Apple. ?
Royal Russet (Royal Russet).
Holland Pippin (Holland Pippin). Eur.
Late Golden Pippin. ?
Crafton Apple. ?
Quince Apple (Quince). Am.
Winter Queening. ?
Leathercoat (Royal Russet). Eur.
Lone's Pearmain (Loan's Pearmain). Eur.?
Spitzbergen (Esopus Spitzenburgh). Am.?
Rhode Island Greening (Rhode Island Greening). Am.
Swaar Apple (Swaar). Am.
Yellow Bellflower (Yellow Bellflower). Am.
Redling (Cooper's Market ?).

Cyder Apples—

Harrison Apple (Harrison). Am.
Gennet-Moyle. ?
Vanwinkle. ?
English Redstreak (Domine ?). Am.?
Hughes's Virginian Crab (Hewe's Virginia Crab). Am.
Cooper's Russeting (Cooper's Russeting). Am.
Campfield Apple (Campfield). Am.
Newtown Pippin (Newtown Pippin). Am.
Nonesuch. ?
Red Sweeting. ?
Yellow Sweeting (Yellow Sweet ?) Am.?
John Apple. ? Eur.

II. COXE'S LIST, 1817.

William Coxe, of Burlington, New Jersey, wrote *A View of the Cultivation of Fruit Trees* in 1817. He adds full descriptions of "one hundred kinds of the most estimable apples cultivated in our country," and I have transcribed the varieties—which are 101 in number—in the list below, making an attempt to iedntify them with present names and to indicate their nativity. Coxe gives a list of 32 other apples which he had on trial, but these I have not reprinted. None of them are popular at the present day. He also makes "a selection of apples, ripening in succession, for the orchard of an admirer of fine fruit," and this is so interesting that I have included it here in full.

"One hundred kinds of the most estimable apples cultivated in our country."

Juneting or Jenneting (White Juneating). English.
Princes Harvest or Early French Reinette (Early Harvest). Am.
Bough Apple (Sweet Bough). Am.
Summer Queen (Summer Queen). Am.
Paradise (dwarf) (Paradise). Eur.
Summer Rose (Summer Rose). Am.
Early Summer Pearmain (American Summer Pearmain). Am.
Rambour d'Ete (Summer Rambo). Eur.
Codling (Old English Codlin). Eng.
Maidens Blush (Maiden's Blush). Am.
Siberian Crab (Siberian Crab). Eur.
Roseau d'Automne (Autumn Rose). Eur.
Hagloe Crab (Hagloe Crab). Eng.
American Nonpareil (American Nonpareil). Am.
Fall or Holland Pippin (Fall Pippin ?). Am.
Corlies' Sweet (Corlie's Sweet). N. J.
Poveshon (Poveshon). N. J.
Styre (Styre). England.
Fama Gusta (Fama Gusta). Eng.
Drap d'Or of France (Drap d'Or). France.
White Sweeting (White Sweet). Am.
Catline, or Gregson Apple (Catline). Am.
Gloucester White (Gloucester White). Va.
Dominé (Domine). Am. ?
Loans English Pearmain (Loan's Pearmain). Eng.
Rambo or Romanite (Rambo). Am.
Monstrous Pippin or N. Y. Gloria Mundi (Gloria Mundi). N. Y.
Pomme d'Apis (Lady Apple). France.
Monstrous Bellflower (Monstrous Bellflower). Am. ?
Pound Apple (Nickajack ?). Am.
Doctor or Dewitt (Doctor). Penna.
Newark King or Hinchman Apple (Newark King). N. J.
Bell-flower (Bellflower). N. J.
Wine Apple (Wine). Am.
Royal Pearmain (Royal Pearmain).
Long Island Russet (L. I. Russet). Am.
Golden Pearmain (Golden Pearmain). Eng.
Morgan Apple. Am.
Shippens Russetting (Shippen's Russet). Penna.
Bullocks Pippin or Sheep Nose. N. J.
Ribstone Pippin (Ribston Pippin). Eng.
Reinette Franche (French Reinette). France.
Newton Spitzemberg (Newtown Spitzenburgh). N. Y.
Esopus Spitzemberg (Esopus Spitzenburgh). Am.
Kaighns Spitzemberg (Kaighn's Spitzenburgh). N. J.
Irish Apple. Europe?
Winter Pearmain (Winter Pearmain ?). Eur.

Jersey, or Rhode Island Greening (R. I. Greening). Am.
French Violet. France.
Seek-No-Further (Westfield Seek-No-Further ?). Am.
Scriveners Red (Scrivener's Red). Am.
Cider Apple. Am.
Cann Apple (Cann). Am.
Roman Stem. N. J.
Cathead.
Newark Pippin (Newark Pippin). Am.
Cumberland Spice (Cumberland Spice). N. J.
Brownite (Brownite). Am.
Aunts Apple (Aunt's Apple). Am.
Fenouillet Jaune, or Yellow Fenouillet (Fenouillet Jaune). Eur.
White Calville (White Calville). France.
Red Calville (Red Winter Calville). France.
Redling (Cooper's Market ?). Am. ?
Golden Pippin. Eng.
Quince Apple (Quince). N. Y.
Orange Apple. Am.
Black Apple (Black Apple). Am.
Royal Russet or Leather-coat (Royal Russet). Eng.
Rose Apple of China (Rose). Eur.
Sweet Pippin (Moore's Sweet).
Vandevere (Vandervere). Am.
Large Yellow Newton Pippin (Yellow Newtown Pippin). Am.
Green Newton Pippin (Green Newtown Pippin). Am.
Michael Henry Pippin (Michael Henry Pippin). Am.
Long Island Pearmain (L. I. Pearmain). Am.
Woods Greening (Wood's Greening). Am.
Reinette Grise. France.
Pennock (Pennock). Am.
Priestly (Priestly). Penna.
Lady Finger or Long Pippin.
Winter Queen (Buckingham ?). Am. ?
American Pippin. Am.
Harrison (American Pippin). Am.
Campfield or Newark Sweeting (Campfield). Am.
Graniwinkle (Graniwinkle). N. J.
Hewes's Virginia Crab (Hewe's Virginia Crab). Am.
Roanes White Crab (Roane's White Crab). Va.
Golden Rennet (Golden Reinette). Eng.
Winesap (Winesap). Am.
Greyhouse (Greyhouse). Am.
Metoiseé, or French Crab (Metoirée). Eur.
Carthouse or Gilpin (Gilpin). Am.
Yellow Everlasting. Am.
Tewksbury Winter Blush (Tewkesbury Winter Blush). Am.
Redstreak (Red Streak). Eng.
Coopers Russeting (Cooper's Russeting). Am.
English Nonpareil (Nonpareil). Eng.
Father Abraham (Father Abraham). Va.
Courpendu. France.

Fearns Pippin. Eng.
Swaar Apple (Swaar). Am.

"A Selection of Apples, Ripening in Succession."

Table Apples—

Junating. Ripens in June and July.
Princes Harvest. July.
Bough. July.
Summer Queen. July and August.
Early Pearmain. July and August.
Summer Rose. July and August.
Codling. August and September.
Maidens Blush. September.
Hagloe Crab, table and cider. September.
Catline. September.
Romanite, or Rambo. September and October.
Fall Pippin. October.
Doctor Apple. October.
Wine. October and November.
Late Pearmain. October and November.
Burlington Greening. October and November.
Bellflower. October and November.
Newark Pippin. November.
Pennock. November.
Michael Henry. November.
Spitzenberg. November.
Newton Pippin. November.
Priestly. November.
Pomme d'Apis, or Lady Apple. December.
Carthouse. December.
Tewksbury Winter Blush. December.

Cider Apples—

Hewes's Crab.
House, or Greyhouse.
Winesap.
Harrison.
Styre.
Roanes White Crab.
Gloucester White.
Redstreak.
Campfield.
American Pippin.
Golden Rennet.
Hagloe Crab.
Coopers Russeting.
Ruckmans Pearmain.

III. THE DOWNING LISTS, 1845 and 1872.

The first edition of A. J. Downing's "Fruits and Fruit-Trees of America" appeared in 1845; the second revision, much augmented by Charles Downing, appeared in 1872. The entire list of apples of the revision is reproduced in the inventory below, and the entries which also occurred in the original edition are designated by italics. All the varieties of the original edition occur in the revision, but sometimes under different names, as indicated by the synonyms in parentheses. Many of the varieties in this extended list were never widely cultivated in America, and are now lost. Very many of the foreign varieties never gained more than a local prominence, yet it was apparently the purpose of the Downings to insert only such of these varieties as had been tried in the country. "The country abounds with collections of all the finest foreign varieties," A. J. Downing writes in his preface, and adds that "these foreign fruits have now been nearly all proved in this country."

For the purpose of allowing of a more accurate comparison of the varieties of apples in favor in 1845 and in 1872, I have also transcribed the varieties from each edition which were specially recommended by the authors.

Abbott.
Abbott's Five Sided Spice.
Abbott's Sweet. N. H.
Abram. S. States.
Acklam's Russet. Eng.
Adams. Penna.
Adams Pearmain.
Agate d'Enckhuysen. Hol.
Agathe. Hol.
Agnes's. Penna.
Ailes. Penna.
Akin's Winter (Crab). Minn.
Alant. Ger.
Alexander. Russ.
Alfriston. Eng.
Allemand. Ger.
Allen's Choice. Penna.
Allen's Pippin. N. C.
All-Hallows. Ireland.
All-Summer. Penna.
Allum. N. C.
Alsace. Penna.
Amelia. Eur.
American Beauty. Mass.
American Golden Pippin. Am.
American Golden Russet. Am.
American Nonpareil. Am.
American Pippin. Am.
American Plate. Am.
American Summer Pearmain. Am.
Ananas.
Ananas de Liege. Belg.
Angle.
Anglo-American. Can.
Archiduc Antoine. For.
Aromatic Carolina. S. C.
Aromatic Russet. Eng.
Ashland. Ohio.
Ashmead's Kernel. Eng.
Ashmore. Am.
Asterus. Eng.
Astrachan (Crab).
Augustine. Am.
Augustus Pearmain. Eng.
Aunt Anna. Ohio.
Aunt Hannah. Mass.
Aunt's Apple.
Aunt Susan's Favorite. Mo.

Austin Sweet. Penna.
Autumn Golden Pippin. Eng.
Autumn Pearmain.
Autumn Romanite. Penna.
Autumn Rose. Eng.
Autumn Seek-No-Farther (*Seek-No-Further*).
Autumn Sweet Bough. Am.
Autumnal Swaar. Am.
Autumnal Sweet Swaar. Am.
Averill. Conn.
Baccolinus. S. States.
Bachelor's Blush. N. J.
Bachelor's Glory. Eng.
Backhouse's Lord Nelson. Eng.
Baddon Pippin. Eng.
Bailey's Golden. Me.
Bailey's Spice. N. Y.
Bailey's Sweet. Am.
Baker. Conn.
Baker's Sweet. New Eng.
Baldwin. Mass.
Baldwin Sweet. Am.?
Balm. Vt.
Baltimore.
Baltimore Greening. Am.
Baltzby. Va.
Bar. Am.
Barbour. Penna.
Barcelona Pearmain. For.
Barchard's Seedling. Eng.
Bark Apple. Eng.
Barnham's Sweet. Conn.
Barnhilt. Am.
Barre. Eur.
Barrett. Conn.
Bars. R. I.
Bartlett. Am.
Barton. Can.
Barton's Incomparable. Eng.
Bauman's Reinette. Belg.
Baxter's Pearmain. Eng.
Beachemwell Seedling. Eng.
Beadell. N. Y.
Bean Sweet. Am.
Bear Sweet.
Beau. Am.
Beauty of Kent. Eng.
Beauty of the West. Am.
Bedfordshire Foundling. Eng.
Beefsteak. Mass.
Beeler's Russet. Ind.?
Belden or Red Cheek.
Belden Sweet. Conn.
Belle Bonde. France.
Belle Bonne. For.
Belle d'Angers. Eur.
Belledge. Eng.
Belleflower Pippin. Ill.
(*Belle-Fleur, White*, is *Ortley*).
Belle Grideline. Eng.
Belle et Bonne. Am.
Belmont (*Waxen Apple*). Penna.
Belpre Keeper.
Belvoir Pippin. Eng.
Belzer.
Ben Davis. Am.
Bennet. Eng.
Benoni. Mass.
Bentley's Sweet. Va.?
Benwell's Pearmain. Eng.
Bere Court Pippin. Eng.
Bergner. Mo.
Bess, Pool. Eng.
Best Bache. Eng.
Bethlemite. Am.
Betsey. Eng.
Betsy's Fancy.
Better than Good. Penna.
Bevan's Favorite. N. J.
Bigg's Nonsuch. Eng.
Billy Barker. N. C.
Billy's Pippin.
Birmingham. Penna.
Birmingham Pippin. Eng.
Bischoff's Reinette. For.
Bishop's Bourne. Can.?
Black Annette. Ky.?
Black Apple. Am.
Black Coal.
Black Gilliflower. Am.
Black Jack. Ohio.
Black Oxford. Me.
Black Warrior. Ala.
Blackstone Valley Sweet. Mass.
Blake. Me.
Blakely. Vt.
Bland's Jubilee. Eng.
Bleckensderfer. Ohio.
Bledsoe Pippin. Ky.
Blenheim Pippin. Eng.
Blinkbonny. Can.
Blockley. Penna.
Blondin. Ind.
Blooming Orange. Eng.
Blue Mountain.
Blue Mountain Sweet. Am.?
Blue Pearmain. Am.
Bluff Sweet. Am.
Boas. Penna.
Boalsburg. Penna.
Bohannan. Ky.
Bonne Virginie. Bel.
Bonum. N. C.
Borden's Early.
Borovitsky. Russ.

Borsdorffer. Ger.
Borsdorf Ognon. Ger.
Bossom. Eng.
Botigne. Belg.
Bottle Greening. E. States.
Bourassa. Foreign.
Bowyer's Russet. Eng.
Bowker.
Bowling's Sweet. Va.
Boxford.
Brabant Bellflower. Hol.
Braddick's Nonpareil. Eng.
Bradley's Autumn. Mich.
Brandywine. Am.
Breedon Pippin. Eng.
Brennaman. Penna.
Brewer. Mass.
Brewer's Pippin. Eng.
Brickley Seedling. Eng.
Bridgewater Pippin. Eng.
Brigg's Auburn. Me.
Brill's Seedling. N. J.
Brimer. Penna.
Brinckley White Sweet.
Bringewood Pippin. Eng.
Bristol. Am.?
Bristol Pearmain. Eng.
Brittle Sweet.
Broad End. Eng.
Broad Eye Pippin. Eng.
Broadwell. Ohio.
Bronson Sweet. Am.
Brookes'. France.
Broughton. Eng.
Brown. Penna.
Brownite. Am.
Brown Kenting. Eng.
Brownlee's Russet. Eng.
Brown's Summer Beauty. Eng.
Buchanan's Pippin. Ohio.
Buckingham (Winter Queen). Am.
Buck Meadow. Conn.
Bucks County Pippin. Penna.
Buel's Favorite. Am.
Buel's Sweet. Am.
Buff. N. C.
Buffington's Early. Penna.
Bullett.
Bullett. S. States.
Bull's Golden Reinette. Eng.
Burrell's Red. Eng.
Burroughs Greening. Vt.
Burr's Seedling. Eng.
Burr's Winter Sweet. Mass.
Burst Open.
Bush. Penna.
Bush's Beauty. Ohio.
Bushwhacker. N. J.
Butter. Penna.
Byam's Sweet. Am.
Byson Wood Russet. Eng.
Cabashea. Am.
Cabbage Head. Am.
Cache. Ill.
Cake Apple. Conn.
Caleb Sweet. Penna.
Calef's Sweet. N. H.
Calville Blanche à Cote's. France.
Calville Malingre. Foreign.
Calville Rouge de Micoud. France.
(*Calville, White Winter,* is *White Calville.*)
Camack's Sweet. N. C.
Cambusnethan Pippin. Scot.
Campbell. Ohio.
Campfield. N. J.
Can. N. Y.
Canada Reinette. Eur.
Cane Creek Sweet. N. C.
Cann.
Cannon Pearmain. Am.
Canterbury Reinette. For.
Capital. Ind.
Capron's Pleasant.
Caraway Russet. Eng.
Carbage.
Cardinal Red. Eur.
Carey's Seedling. Ohio.
Carlisle Codlin. Eng.
Carmel Sweet. N. Y.
Carnahan's Favorite. Ohio.
Carnation. S. States.
Carolina Red June. N. C.
Carolina Sweet.
Carolina Watson. S. States.
Caroline. Eng.
Caroline. N. J.
Caroline. Ohio.
Caroline Auguste. Belg.
Carpenter. Ohio.
Carpentin Reinette. Ger.
Carter. Mass.
Carter's Blue. Ala.
Carver. Penna.
Cary's Summer.
Case. Am.?
Cash Sweet.
Castle Major. Eng.
Catface. Ky.
Cathead Sweet.
Catline. Md.
Cato. Md.
Catooga. S. States.
Catshead.
Caywood. N. Y.
Cedar Falls. N. C.
Celestia. Ohio.
Cellini. Eng.

Challenge. Ohio.
Champaign Reinette. Foreign.
Chandler. Conn.
Chaney. Penn.
Chapman's Orange.
Charley's Winter. Va.
Chase's Seedling. Me.
Chase's Winter Sweet (Crab).
Chattahoochie. Ga.
Cherry (Crab).
Cheese. Penna.
Cheesborough Russet.
Cheltenham. Penna.
Chenango Strawberry. N. Y.
Cheney. Conn.
Chestatee. S. States.
Chester. Penna.
Chester Pearmain. Eng.
Chester Spitzenberg. Penna.
Chestoa. S. States.
Chicago (Crab). Am.
Chief Good. Ky.
Christiana. Del.
Christie's Pippin. Eng.
Christ's Gold Reinette. Ger.
Chronical. Ind.
Churchill Greening.
Church's Late Sweet. S. States.
Citron des Carmes. France.
Citronen Reinette. Ger.
Clapper Flat. N. Y.
Clara Pippin. Eng.
Clarke. N. Y.
Clarke Pearmain. N. C.
Clarke's Delaware. Md.
Clarkson. Mich.
Claygate Pearmain. Eng.
Clayton. Ind.
Clepington. Eng.
Cley Pippin. Eng.
Cluster.
Cluster Golden Pippin. Foreign.
Cluster Pearmain. Ind.
Clyde Beauty. N. Y.
Cobham. Eng.
Cobourg Pippin. Eng.
Coccagee. Ireland.
Cockle Pippin. Eng.
Cocklin's Favorite. Penna.
Cockpit. Eng.
Coe's Golden Drop. Eng.
Cogswell. Conn.
Cole. Eng.
Columbian. Am.
Colvert. Am.?
Conant's Red. Am.
Condit Sweet. N. J.
Congress. Mass.
Connecticut Summer Sweet. Am.
Connett's Sweet. Am.
Contin Reinette. Scot.
Conway.
Cook's Red Winter. S. C.
Cooledge's Favorite. Mass.
Cooper. Am.
Cooper's Early White. Am.
Cooper's Market. Am.
Cooper's Russeting. N. J.
Coral (Crab).
Coral Blush. Scot.
Corlie's Sweet. N. J.
Cornell's Fancy. Penna.
Cornfield. S. States.
Cornish Aromatic. Eng.
Cornish Gilliflower. Eng.
Cornish Spice. Eng.?
Corse's Favorite Can.
Cos or Caas. N. Y.
Costard. Eng.
Cotsville Spitzenberg. Ohio.
Court Pendu de Tournay. Hol.
Court Pendu Plat. France.
Court Pendu Rose. France.
Court of Wick. Eng.
Cowarne Red. Eng.
Cowarne's Queening. For.
Coxe's Orange Pippin. Eng.
Coxe's Pomona. Eng.
Cracking. Ohio.
Cram or Kram.
Cranberry. S. States.
Cranberry Pippin. N. Y.
Cranberry Russet. Am.
Crawford.
Crawford's Keeper. Ohio.
Cray Pippin. Eng.
Crayton.
Cream. N. Y.
Creed's Marigold. Eng.
Creede's Quittenreinette. Ger.
Creek. Penna.
Creeper. Eng.
Crego Red Streak. N. Y.
Crimson Queening. Eng.
Crispin.
Crittenden. Ky.
Crofton Pippin. Ireland.
Crook's Seedling. Ind.
Cropsey's Favorite. Ill.
Crotcher. Md.
Crow Egg. Ind. or Ky.
Crow Egg. S. States.
Crow Nest. Ohio.
Cullasaga. N. C.
Cullawhee. S. States.
Culp. Ohio.
Cumberland Seedling. Penna.
Cumberland Spice. N. J.

Currant (Crab).
Curry's Red Winter. S. States.
Curtis Greening. W. States.
Curtis Sweet. Am.
Custard. N. Y.
Cut Pippin. Am.
Dahlongea. S. States.
Dahlton. Am.
Dame Jeannette. France.
Dana. Ohio.
Dana Greening.
Dana's Striped Sweet. Ohio.
Daniel. Ind.
Daniel's Apple.
Dan Pearmain. Ind.
Danvers Winter Sweet. Mass.
Dapper. Ga.
Darling Pippin. Eng.
Darlington. Ohio.
Dartmouth Sweet. Mass.
Davis. Mich.
Davis's Sweet. Ohio.
Dawson's Cluster. Ohio.
Day. Ky.
Dayton. Me.
Defiance. Ohio.
Delaware. Am.?
Delight. Ohio.
Democrat. N. Y.
Democrat. Ohio.
Derry Nonsuch.
(*De Saint Julian* is *Saint Julien*).
Detroit Black (Grand Sachem). Am.
Detroit Red (Detroit). Am.
Devonshire Buckland. Eng.
Devonshire Golden Ball. Eng.
Devonshire Quarrenden. Eng.
Devonshire Queen. Eng.
Devonshire Red Streak. Eng.
Devonshire Wilding. Eng.
Dikskill. N. Y.
Dickson's Emperor. Scot.
Deil's Reinette. Belg.
Dietzer Rothe Mandel Reinette. Ger.
Dillingham. Ohio.
Disharoon. Ga.
Dobb's Kernel Golden Pippin. Eng.
Doctor. Penna.
Doctor Fulcher Ky.
Dr. Helsham's Pippin. Eng.
Dodge's Crimson. Tenn.
Domine. Am.
Donnelan's Seedling. Am.
Double Flowering Chinese (Crab). For.
Double White Siberian (Crab).
Doux d'Argent. France.
Dowell's Pippin. Eng.
Downing's Paragon. Ill.
Downton Pippin. Eng.
Dow's Winter Pippin. N. Y.
Drap d'Or. Eur.
Dredge's Fair Maid of Wishford. Eng.
Dredge's Fame. Foreign.
Dredge's Golden Pippin. For.
Duchesse de Brabant. Eur.
Duchess of Oldenburgh. Russ.
Duckett. S. States.
Duffield Pippin. Penna.
Du Halder. Hol.
Duke of Beaufort's Pippin. Eur.
Duke of Devonshire. Eng.
Dulce Doman. Penna.
Dumelow's Seedling. Eng.
Dumpling. Am.
Duncan. For.
Dusten. Am.
Dutch Codlin. Eur.
Dutch Mignonne. Hol.
Duzenbury. N. Y.
Dyer (Pomme Royale.) France?
Early Chandler.
Early Harvest. Am.
Early Joe. N. Y.
Early Julien. Scot.
Early Long Stem. Am.?
Early Marrow. Scot.
Early Nonpareil. Eng.
Early Nonpareil. Am.
Early Pennock. Am.
Early Queening.
Early Red Margaret. Eur.
Early Red Steak.
Early Red Sweet. Penna.
Early Ripe. Am.
Early Spice. Eng.
Early Strawberry. N. Y.
Early Sweet. Ohio.
Early Tart. Penna.
Early Tart Harvest.
Early Wax. Eng.
Early Yellow Reinette. For.
Easter Pippin. Eng.
East Grinstead. Eng.
Eaton. N. Y.
Edel Kœnig. Ger.
Edgar's. Eng.
Edward's. N. C.
Eggermont. For.
Egg-Top.
Egyptian Belle. Am.
Egyptian Russet. Am.
Eldon Pippin. For.
Elford Pippin. For.
Elicke's Winter Sweet. Penna.
Ellijay. Ga.
Ellis. Conn.

Ellsworth. N. Y.
Emperor. Am.
Ene's Winter Sweet. S. States.
Enfield Pearmain.
English Beauty.
English Crab.
English Gilliflower.
English Granat Reinette. Ger.
English Reinette. Eur.
English Russet.
English Sweet (*Ramsdell's Sweet*).
Epsy. Vt.
Eptings Premium. S. States.
Eptings Red Winter. S. States.
Erie Sweet. Penna.
Esopus Spitzenburgh. N. Y.
Essex Pippin. Eng.
Esten. R. I.
Etoile. Eur.
Eustis. Mass.
Evening Party. Penna.
Ewalt. Penna.
Excel. Conn.
Exquisite. Ill.
Eyers' Greening. For.
Fail-Me-Never. Scot.
Fairbanks. Me.
Fairfield Summer Queen.
Fair Maid. Penna.
Fair Maid of Taunton. Eng.
Fair's Nonpareil. For.
Fallawater. Penna.
Fall Butter (several). Am.
Fall Greening. N. Y.
Fall Harvey. Mass.
Fall Jenneting.
Fall Limbertwig.
Fall Orange. Mass.
Fall Pearmain. Am.
Fall Pippin. Am.
Fall Seek-No-Further. Am.?
Fall Spitzenburgh. Vt.
Fall Wine. Am.
Fall Winesap. W. States.
Fama Gusta. Eng.
Fameuse (*Pomme de Neige*). France?
Family. Ga.
Fancher. S. States.
Fanny. Penna.
Farleigh Pippin. Eng.
Farley's Red. Ky.
Father. N. Y.
Faust. N. C.
Favorite. Ky.
Fay's Russet. Vt.
Fearn's Pippin. Eng.
Federal Pearmain. Eng.
Fell's Winter Sweet. Am.
Fenley. Ky.
Fenouillet Gris. France.
Fenouillet Jaune. France.
Fenouillet Rouge. France.
Ferdinand. S. C.
Ferris. Am.
Ferris. Del.
Fett.
Field. Penna.
Fink. Ohio.
First and Last. Eng.
Fishkill Beauty. N. Y.
Fish's Seedling. N. H.
Fiske.
Flake's Fall. Penna.
Flanders Pippin. For.
Flanders Reinette. For.
Flat Pippin. Ohio.
Flat Sweet. E. States.
Flat Sweet. W. States.
Fleet's Nonpareil.
Fleiner. Ger.
Flora. S. States.
Flory. Ohio.
Flower of Kent. Eng.
Flushing Spitzenburgh. Am.
Focht. Penna.
Foote's Nonpareil. Mass.
Forange. Ohio.
Ford Apple. N. Y.
Forest. Am.
Forest Styre. Eng.
Forge. Eng.
Forman's Crew. Eng.
Fort Miami. Ohio.
Foster Sweet. Am.
Fouldon Pearmain. Eng.
Foundling. Mass.
Fourth of July. Ger.
Foxley (Crab). Eng.
Fox Whelp. Eng.
Fraise. France
Fragrant (Crab).
Framboise. Ger.
Franchot. N. Y.
Franklin's Golden Pippin. Am.
Freeman. N. J.
Freeze and Thaw. Penna.
Fremont Pippin. Penna.
French. New Eng.?
French Bellflower. France.
French Crab. Foreign.
French Nonpareil.
French Pippin. Am.?
French Reinette. France.
French Russet. Foreign.
French's Sweet. Mass.
Friar. Eng.
Frisland Reinette. Ger.
Frouclin. Penna.

Front Door. Am.
Fullerton Sweet. Am.
Fulton. Ill.
Fulton Strawberry. Ill.
Fulwood. Eur.
Gabriel.
Gaesdonker Gold Reinette. Ger.
Ganges. Eur.
Garden. Va.
Garden. Am.?
Garden Royal. Mass.
Garden Stripe.
Garden Sweet. New Eng.
Gardner Sweet. Am.?
Gardner's Sweet Pearmain. N. Y.
Garrettson's Early. N. J.
Garter. Eng.
Gault's Bellflower. Am.?
Gaumont. France.
General Grant (Crab). Am.
General Haskell. Ky.
Genesee Chief. Am.
Geneva Pippin. N. Y.
Gentle's Large Red.
George. Ohio.
Gestreifter Sommer Zimmetapfel. Ger.
Gewiss Good. Penna.
Giant. Penna.
Giles. Conn.
Gilpin. Va.
Gipson's Kentucky. Ky.
Gladney's Red. Miss.
Glanz Reinette. Ger.
Gleason Sweet.
Glendale. Ohio.
Gloria Mundi. Am.
Glory of England. Eur.
Glory of the West. Eur.?
Gloucester White. Va.
Goble Russet. Am.?
Gogar Pippin. Scot.
Golay. Ind.
Golden. Am.?
Golden (Crab).
Golden Ball. Conn.
Golden Burr. For.
Golden Cross. N. Y.
Golden Harvey. Eng.
Golden Knob.
Golden Lustre. Eng.
Golden Monday. Eur.
Golden Noble. Eng.
Golden Nonpareil.
Golden Pearmain. Eng.
Golden Pippin. Eng.
Golden Pippin. Am.
Golden Red. N. Y.
Golden Reinette. Eur.
Golden Reinette of Vanderlaans. Hol.
Golden Russet. Eng.
Golden Russet of Massachusetts. Am.
Golden Seedling. Mo.
Golden Streak. Eng.
Golden Sweet. Conn.
Golden Wilding. N. C.
Golden Worcester. Eur.
Gold Reinette von Bordeaux. Eur.
Goodyear. Penna.
Gooseberry. Eng.
Gooseberry Pippin. Eng.
Gould's Sweet. Am.
Governor. Am.
Governor Charter. Am.
Gracey. Ill.
(*Grand Sachem* is *Detroit Black*).
Grange. Eng.
Grange's Pearmain. Eng.
Granite Beauty. N. H.
Graniwinkle. N. J.
Granny Earle.
Gravenstein. Ger.
Great Unknown. Am.
Green Cheese. Am.
Green Domine. Penna.?
Green Mountain Pippin. Am.
Green Newtown Pippin. (*Newtown Pippin*). N. Y.
Green Reinette. For.
Green's Choice. Penna.
Green Seek-No-Further. N. Y.
Green Sweet. Mass.?
Green Sweet of Indiana. Am.
Green Tiffin. Eng.
Greenup's Pippin. Eng.
Green Woodcock. Eng.
Greists Fine Winter. Penna.
Grey Canada Reinette.
Grey French Reinette. For.
Greyhouse. Am.
Grey Leadington. Scot.
Grey Reinette. France.
Griffith. Ohio.
Grimes' Golden Pippin. Va.
Grooveland Sweet.
Gros Faros.
Grosh. Penna.
Grouzier. Am.
Gruver's Early. Penna.
Guernsey Pippin. Eur.
Gullett.
Gully. Penna.
Habersham's Pearmain.
Hagloe Crab. Eng.
Hague Pippin. Ind.
Hain. Penna.

Hall. N. C.
Hall Door. Eng.
Hall's Sweet.
Hambledon Deux Ans. Eng.
Hamilton. S. States.
Hammond. Am.?
Hampton Bellflower. Ohio.
Hampton's Fall Sweet. Ohio.
Hampton's Honey Sweet. Ohio.
Hampton's Late Sweet. Ohio.
Hampton's Russet. Ohio.
Hampton's Siberian (Crab). Ohio.
Hancock. Penna.
Hannah.
Hanwell Souring. Eng.
Harbord's Pippin. Eng.
Hare. Am.
Hargreave's Green Sweet. Eng.
Harnish. Penna.
Harris. N. C.
Harrison. N. J.
Harry Sweet. Penna.
Hartford Sweet. Conn.
Harvest Red Streak. Am.
Harvey. Eng.
Harvey's Pippin. Eng.
Harvey's Wiltshire Defiance. Eng.
Haskell Sweet. Mass.
Haute Bonté. France.
Hawley. N. Y.
Hawthornden. Scot.
Hay Boys. Ohio?
Hector. Penna.
Helen's Favorite. Ohio.
Hemphill. N. C.
Henry Apple. Vt.
Henwood. Ind.
Hepler. Penna.
Herfordshire Pearmain. Eng.
Herman. Penna.
Hess. Penna.
Hetterich. Penna.
Hewe's Virginia Crab. Am.
Hewitt's Sweet.
Hick's. N. Y.
Hiester. Penna.
Higby Sweet. Ohio.
Highlander. Vt.
Hightop. Ind.
Hightop Sweet. Mass.
Hill's Favorite. Mass.
Hill's Sweet.
Hilton. N. Y.
Hinnersley. Penna.
Hoary Morning. Eng.
Hobb's Sweet. Penna.
Hockett's Sweet. N. C.
Hodge's Limbertwig. W. States.?
Hog Island Sweet. N. Y.
Holbert's Victoria. Eng.
Holcomb.
Hollady. Va.
Hollandbury. Eng.
Holland Pippin. Eur.
Holland Sweet.
Hollow Core. N. J.
Hollow Core. Eng.
Hollow Crown. New Eng.
Hollow Crown Pippin. Eng.
Holly. Ga.
Holmes. Am.
Holmes' Sweet. N. Y.
Holsten Sweet.
Honey Greening. W. States.
Honey Sweet. Ohio?
Hood.
Hooker. Conn.
Hoover. S. C.
Hopkins. Am.
Hopper. S. C.
Hormead Pearmain. Eng.
Horn. Ga.
Horse Apple. S. States.
Horsham Russet. Eng.
Hoskreiger. Foreign.
Housum's Red. Penna.
Howard's Edgemont. Penna.
Hubbard.
Hubbard's Pearmain. Eng.
Hubbard's Sugar. N. C.
Hubbardston Nonsuch. Mass.
Hubbardton Pippin.
Hughes. Penna.
Hughes' Golden Pippin. Eng.
Hull Blossom. New Eng.
Hull Sweet.
Hunge. S. States.
Hunt. Am.
Hunthouse. Eng.
Hunt's Connecticut. Am.
Hunt's Deux Ans. Eng.
Hunt's Duke of Gloucester. Eng.
Hunt's Russet. Mass.
Hurlbut. Conn.
Hutcheson. Ky.
Hutchison's Winter Sweet (Crab).
Hutton Square. Eng.
Hyslop (Crab).
Imperial. France.
Indiana Beauty. Ind.
Indiana Favorite. Ind.
Indian Prince. Am.
Ingram. Mo.
Irish Peach Apple. Eur.
Irish Reinette. Eur.
Island Beauty. Am.?
Isle of Wight Pippin. Eur.
Isleworth Crab.

Italian Rose. Italy.
Jabe. Mass.
Jabez Sweet. Conn.
Jackson. Penna.
Jacques Lebel. Eng.
Jane. Penna.
Jarminite. Ohio.
Jefferis. Penna.
Jefferson County. N. Y.
Jenkins. Penna.
Jennings Sweet. Ohio.
Jersey Pippin. Foreign.
Jersey Sweeting. Am.
Jewett's Best. Vt.
Jewett's Fine Red. N. H.
Joel. Penna.
John Carter. Conn.
Johnson. Conn.
Johnson Russet.
John's Sweet. N. H.
Jolly Beggar. For.
Jonathan. N. Y.
Jubilee Pippin. Eng.
Judge Andrews.
Juicy Bite. Penna.
Julian. S. States.
Junaluskee. N. C.
Kaighn's Spitzenburgh. N. J.
Kane. Del.
Keddleston Pippin. Eng.
Keeping Red Streak. Eng.
Keeping Russet. Eng.
Keim. Penna.
Keiser. Am.
Kelsey. Penna.
Kelsey Sweet. Conn.
Kennebec Russet. Me.
Kennedy's Red Winter. Penna.
Kenney. Am.
Kenrick (Kenrick's Autumn). Mass.
Kent. Mich.
Kentish Broading. Eng.
Kentish Fill-Basket. Eng.
Kentish Pippin. Eng.
Kentucky. Am.
Kentucky Cream. Ky.
Kentucky King. Am.
Kentucky Red Streak. Am.
Kentucky Sweet. S. States.
Kerry Pippin. Ireland.
Keswick Codlin. Eng.
Ketchum's Favorite. Vt.
Kikita.
Kilham Hill. Mass.
Kinellan. Scot.
King of the Pippins. Eng.
King of Tompkins Co. N. J.?
Kingsley. N. Y.
Kingston Black. Eng.
King Tom. S. States.
Kinney. S. States.
Kirkbridge White.
Kirk's Lord Nelson. Eng.
Kirtland. Am.
Kittageskee. S. States.
Klaproth. Penna.
Knickerbocker.
Knobby Russet. Eur.
Knowles' Early. Am.
Knox Russet. Penna.
Kohl. Ger.
Kœnig's Reinette. Ger.
Krauser. Penna.
Krauter Reinette. Ger.
Labute. France.
Lacker. Penna.
Lady (Crab). Eur.
Lady Apple. France.
Lady Blush. Am.
Lady Finger, several varieties, probably foreign.
Lady Haley's Nonsuch. Am.
Lady of the Wemyss. Scot.
Lady's Delight. Eng.
Lady's Fancy. Am.?
Lady's Seedling. Penna.
Lady's Sweet. Am.
Lady's White. Ohio.
Lafayette. N. H.
Lake. Ohio.
Lamb Abbey Pearmain. Eng.
Lancaster Greening. Penna.
Lancaster Sweet. Am.
London. Am.
Lane's Red Streak. Ill.
Lane's Sweet. Mass.
Lansingburgh. N. Y.?
Large Red Siberian (Crab).
Large Yellow Bough. Am.
Larue's Big Green. Ky.
Late Strawberry. N. Y.
Late Sweet. Am.
Late Wine.
Latham. N. Y.
Lauren's Greening. Ga.
Lawver. Am.
Leaver. S. States.
Ledge Sweet. N. H.
Leicester Sweet. Mass.
Leithemer Streifling. Ger.
Leland Spice. Mass.
Lemon Pippin. Eng.
Lesher. Penna.
Lewis. Ind.
Lewis's Incomparable. Eng.
Liberty. Ohio.
Ligoz.
Limber Twig. Am.

Lincolnshire Holland Pippin. Eur.
Lindenwald. N. Y.
Lindley's Nonpareil. N. C.
Lippincott Sweet. N. J.
Litchfield Pippin. Me.
Little Beauty. For.
Loan's Pearmain.
Locy.
Lodgemore Nonpareil. Eng.
London Pippin. Eng.
London Sweet. Ohio.
Long Island Pearmain. Am.
Long Island Pippin. Am.
Long Island Russet. Am.
Long John.
Long's Red Winter. Va.
Long Start. Eng.
Long Stem, several kinds, probably all American.
Longville's Kernel. Eng.
Lord Burleigh. Eng.
Lord Suffield. Eng.
Lorick Cluster. S. States.
Loring Sweet. Mass.
London Pippin. Va.
Louise Renard. Belg.
Lovett's Sweet. Mass.
Lowell. Am.
Lowre Queen. Am.
Luce's Early Joe. Am.?
Lucombe's Pine Apple. Eng.
Lucombe's Seedling. Eng.
Ludwig. Penna.
Lyman's Large Summer. Am.
(*Lyman's Pumpkin Sweet* is *Pumpkin Sweet*).
Lyon's Sweet. Conn.
Lyscom. Mass.
McAfee's Nonsuch. Ky.
McCoy's Pippin. Penna.
McDaniel. Ohio.
McDowell's Sweet. N. C.
McHenry. Ind.
Mackay Sweet. Mass.
McKim's Vandervere. Penna.
McKinley. Ind.
Maclean's Favorite. Eng.
McLellan. Conn.
Macomber. Me.
Magnolia. Mass.
Maiden's Blush. N. J.
Maiden's Blush (Crab).
Maiden's Favorite. N. Y.
Major. Penna.
Mala Carle. S. Eur.
Mamma. S. States.
Mammoth June. Ky.
Manaen. Penna.
Mangum. S. States.
Mank's Codlin. Eng.
Mannington's Pearmain. Eng.
Manomet. Mass.
Mansfield Russet. New Eng.
Marble Sweet. Am.
March's Red Winter. Ohio.
Marengo (Crab). Ill.
Margil. Eng.
Maria Bush. Penna.
Marks. Penna.
Marmalade Pippin. Eng.
Marshall. New Eng.
Marshall's Sweet. Ohio.
Marston's Red Winter. N. H.
Martin. Ohio?
Martin Nonpareil. Eng.
Mary.
Maryland Beauty. Am.
Masten. N. Y.
Master's. Eng.
Matlock's Summer.
Matson. Am.?
Mattamusket. N. C.
Mauck. Penna.
Maverack's Sweet. S. C.
Maxey. Am.
May. Va.
May Seek-No-Further. Am.
Meach. Am.
Meader's Winter (Crab).
Meadow Sweet.
Mear's Sweet. Ohio.
Meister. Penna.
Melon. N. Y.
Melrose. Scot.
Melt in the Mouth. Penna.
Melvin Sweet. Mass.
Menagere. For.
Menonisten Reinette. Ger.
Mensfield Calville. Eur.
Mercer. Am.
Mère de Ménage. Eur.
Merrill's. N. Y.
Merritt's Sweet.
Merwin.
Methodist. New Eng.
Metoirée. Eur.
Mexico. Conn.
Michael Henry Pippin. N. J.
Middle. N. Y.
Middlebourg Reinette. Hol.
Mifflin King. Penna.
Mignonne d'Hiver. France.
Milam. S. States.
Milch. Ger.
Miller. N. Y.
Miller. Penna.
Minchall Crab. Eng.
Minier's Dumpling. Eng.

Minister. New Eng.
Minkler. Ill.
Mishler's Sweet. Am.
Mitchelson. Eng.
Molasses. N. C.
Molasses. Ohio?
Monarch. W. States?
Monkland Pippin.
Monk's Favorite. Ind.
Monkton. Eng.
Monmouth Pippin. N. J.
Monstrous Bellflower.
Montalivet. France.
Montreal Beauty (Crab).
Moore. For.
Moore's Extra. Ohio.
Moore's Greening. Conn.
Moore's Sweet.
Moorhen Pippin. Eng.
Moreland. Penna.
Morgan White. Ill.?
Morrison Sweet. N. Y.
Morrison's Red. Mass.
Morris's Court of Wick. Eng.
Morris's Russet. Eng.
Morton. Ohio.
Moses Wood. Me.
Moss's Incomparable. Eng.
Mote's Sweet. Ohio.
Mother. Mass.
Mother Davis. Am.
Mountain Belle. Ga.
Mountain Sweet.
Mouse Apple. N. Y.
Munson Sweet. Am.
Murphy. Mass.
Muscat Reinette. Ger.
Muster. Ind.
Naigle's Winter. Mo.
Nanny. Eng.
Nantahalee. Ala.
Nectar. N. C.
Ned. Penna.
Needle. For.
Neisley Bellflower. Ohio.
Nelson. Am.?
Nelson's Codlin. Eng.
Nequassa. N. C.
Neversink. Penna.
Newark King. N. J.
Newark Pippin. Am.
Newbury.
New Late Reinette. For.
New Rock Pippin. Eng.
New Small Lemon Pippin. Eng.
(*Newtown Pippin* is *Green Newtown Pippin*.)
Newtown Spitzenburgh. N. Y.
Nichols Sweet.
Nickajack. S. States.
Neiman's Red Reinette. Ger.
Nix Green. Ga.
Noblesse de Gand. For.
Nonpareil (*Old Nonpareil*). Eng.
Nonpareil Russet. Eng.
(*Nonpareil, Scarlet* is *Scarlet Nonpareil*.)
Nonsuch. Eng.
Norfolk. Mass.
Norfolk Beaufin. Eng.
Norfolk Paradise. Eng.
Norfolk Stone Pippin.
Norfolk Storing. Eng.
Northern Spy. N. Y.
Northern Sweet. Vt.
Northfield Beauty.
Nottingham Pippin. For.
Nursery.
Oakes. Mass.
Oblong-Fruited Siberian (Crab).
Oconee Greening. Ga.
Ofine. Eng.
Ogdensburgh. N. Y.
Ogleby. Va.
Ohio Nonpareil. Am.
Ohio Pippin. Ohio.
Ohio Red Streak. Ohio.
Ohlinger. Penna.
Old English Codlin. Eur.
Old Field. Conn.
Old House. Penna.
Old Hundred. Am.
Old Royal Russet.
Old Town Crab Am.?
Old Town Pippin. Am.?
Olive. For.
Olive. N. C.
Omar Pasha. Eng.
Orange. France.
Orange. N. J.
Orange. Penna.
Orange (Crab).
Orange Pippin. France.
Orange Sweet, several varieties. Am.
Ord. Eng.
Orleans Reinette. For.
Orndorf. Ohio.
Orne's Early. For.
Ortley (*Belle-Fleur, White; Woolman's Long*). N. J.
Osceola. Ind.
Oskaloosa. Am.?
Oslin. Scot.
Osnabrucker Reinette. For.
Osterley. Eng.
Ostogate. For.
Overman's Sweet. Ill.

Oviatt. Ohio.
Ox. Penna.
Oxnead Pearmain. Eng.
Ox Sweet. Mass.
Padley's Pippin. Eng.
Panden Sweet.
Park Spice. N. Y.
Parmentier Reinette. France.
Parrot Reinette. For.
Parry's Pearmain. Eng.
Passe Pomme d'Automne. Ger.
Passe Pomme Rouge. Eur.
Patch's Russet. Eng.
Paterson's Sweet. Am.?
Pawpaw. Mich.
Pawsan. Eng.
Peach.
Peach-Pond Sweet. N. Y.
Pear. Penna.
Pearsall's Sweet. N. Y.
Pearson's Early. Am.
Pearson's Plate. Eng.
Peck's Pleasant. R. I.
Pelham Sweet. Mass.
Pennington's Seedling. Eng.
Pennock. Pa.
Pennsylvania Sweet. Am.
Pennsylvania Wine Sap. Am.
People's Choice. Penna.
Pepin Russe. Eur.
Perry Russet. Am.
Petit Jean. Eur.
Petworth Nonpareil. Eng.
Phillippi. Penna.
Phillips' Sweet. Ohio.
Phœnix. Ill.
Pickard's Reserve. Ind.
Pickman. Mass.
Pifer. Penna.
Pigeon. For.
Pigeonette. Eur.
Pigeonette de Rouen. Eur.
Piketon Russet. Ohio.
Piles Russet. Eng.
Pineapple Russet. Eur.?
Pine Creek Sweet. Penna.
Pine Strawberry. Am.
Pink Sweeting. Penna.
Pinner. Eng.
Pioneer. Penna.
Pitmaston Golden Pippin. Eur.
Pitmaston Nonpareil. Eng.
Pitmaston Pine Apple. Eur.
Pittsburgh Pippin. Penna.
Platt's Sweet. Vt.
Pleasant Valley Pippin. Am.
Plum.
Polish. Mass.
Polly Bright. Va.
Pomeroy. Am.
Pomeroy. Eng.
Pomeroy.
(*Pomme de Neige* is *Fameuse.*)
Pomme Grise. For.?
(*Pomme Royale* of first edition is *Pound Royal.*)
Pomme Water. For.
Ponto Pippin. Eng.
Poorhouse. Tenn.?
Pope. Eng.
Porter. Mass.
Porter Spitzenburgh. Conn.?
Portugal Gray Reinette. For.
Posey's Red.
Posteley.
Potter's Large. Eng.
Pottinger.
(*Pound* is *Nickajack.*)
Pound Cake. S. States.
Pound Royal. France.
Pound's July. Ky.
Pound Sweet (several varieties). Am.
Poveshon. N. J.
Powell's Russet. Eng.
Powers. Ohio.
Power's Large (Crab). N. Y.
Pownal Spitzenburgh. Vt.
Prairie Calville. For.
Pratt's Sweet. N. Y.
President. N. H.
President De Fay's Dumonceau. Belg.
Press. Penna.
Press Ewing. Ky.
Priestly. Penna.
Priest's Sweet. Mass.
Primate. Am.
Princely. Penna.
Prince of Orange. For.
Princesse Noble. For.
Princesse Noble des Chartreaux. For.
Prinz. Ger.
Progress. Conn.
Proliferous Reinette. Eng.
Prolific Beauty. Ohio.
Prolific Sweet. Conn.
Prop. Penna.
Pryor's Red. Va.
Pucker End. N. Y.
Pumpkin Russet. New Eng.
Pumpkin Sweet (*Lyman's Pumpkin Sweet*). Several varieties. Am.
Purple Siberian (Crab). Eur.
Pushmataha. Ala.
Putnam Harvey. Am.?
Putnam Keeper. Ky.

(*Putnam Russet* is *Roxbury Russet.*)
Putnam Sweet. Ohio.
Putneyite. Am.?
Quaker. Penna.
Quaker Pippin. Am.
Queen Charlotte. Ger.
Queen of Sauce. For.
Queen of the Cippins. For.
Queen of the Valley. Am.
Quince.
Quince. Me.
Rabine. Eng.
Ragan. Ind.
Rambo. Del.
(*Rambour Franc* is *Summer Rambo.*)
Rambour Gros. For.
Rambour Papeleu. Russ.
Rambour Rose. For.
(*Ramsdell's Sweet* is *English Sweet.*)
Ram's Horns.
Randel's Best. Ohio?
Rasche. Mo.
Rattle-Box.
Ravelston Pippin. Scot.
Rawle's Janet. Va.
Rawling's Red Streak. Eng.
Rebecca. Del.
Red and Green Sweet.
Red Apple. Penna.
Red Astrachan. Eur.
Red Autumn Calville. France.
Red Belle-Fleur. France.
Red Canada. Am.
Red Cathead. Am.
Red Cedar. Ohio?
Red Cheek. Conn.
Red Cheek. Mass.
Red Cheek. N. J.
Red Favorite. Penna.
Red Gilliflower. S. States.
Red Horse. Ky.?
Redick. Conn.
Red Ingestrie. Eng.
Red Jewell. Ky.
Red June Sweet.
Red Mormon. Penna.
Red Must. Eng.
Red Rance.
Red Republican. Penna.
Red Romarin. Italy.
Red Russet. N. H.
Red Seek-No-Further. Penna.
Red Siberian (Crab). For.
Red Streak. Eng.
Red Stripe. Am.?
Red Sweet. Ohio.
Red Warrior. N. C.
Red Winter Calville. France.
Red Winter Pearmain. S. States.
Red Winter Sweet. Am.
Reed. N. Y.
(*Reinette Blanche d'Espagne* is *White Spanish Reinette.*)
Reinette Calville. For.
Reinette Coulon. For.
Reinette Daniel. For.
Reinette d'Anjou. France.
Reinette de Bayeux. Belg.
Reinette de Breda. For.
Reinette de Caux. France.
Reinette de Clareval. France.
Reinette de Hongrie. For.
Reinette de Thorn. For.
Reinette Doré. France.
Reinette du Vigan. For.
Reinette Grain d'Or. For.
Reinette Pippin. For.
Reinette Quarrendon. France.
Reinette St. Lambert. For.
Reinette Triomphante. Ger.
Reinette Vervaene. Belg.?
Republican Pippin. Penna.
Rhode Island Greening. Am.
Rhode's Orange. Ga
Ribston Pippin. Eng.
Richard's Graft. N. Y.
Richardson. Mass.
Richmond. Ohio.
Ridge Pippin. Penna.?
Riest. Penna.
Rigley. Penna.
Ritter. Penna.
River. Mass.
Roadstown Pippin. N. J.
Roane's White Crab. Va.
Roberson's White. Va.
Robert Bruce. N. C.
Roberts. Ohio.
Robey. Va.
Robin. For.
Robinson's Pippin. Eng.
Robinson's Superb. Va.
Robinson's Sweet. Vt.
Rochelle Reinette. For.
Rock. N. H.
Rock Pippin. Ohio.
Rockport Sweet. Mass.
Rock Sweet. Mass.
Rolen's Keeper. Ohio?
Rollin. N. C.
Romanite. S. States?
Roman Stem. N. J.
Rome Beauty. Ohio.
Rosa. France.
Rose. For.
Roseau. For.
Roseau d'Automne. For.
Rose Calville. France.

Rose de Hollande. For.
Rosemary. For.
Ross Nonpareil. Ireland.
Rostocker. Ger.
Rosy Red. Am.
Rouen Transparent (Crab).
Round Winter Nonsuch. For.
Rowe. Eng.
Roxbury Russet (*Putnam Russet*). Mass.
Royal Pearmain. For.
Royal Reinette. For.
Royal Russet. Eng.
Royal Shepherd. For.
Royal Somerset. For.
Rules Summer Sweet. Penna.
Rum Apple. Vt.
Runnels. Me.
Rushock Pearmain. Eng.
Russet Pearmain. Conn.
Russet Table Pearmain. Eng.
Russian Transparent. Eur.
Rymer. For.
Sable Sweet. Vt.
Sack and Sugar. Eng.
Sailly Autumn. N. Y.
Saint Julien (*De Saint Julian*). For.
St. Lawrence. Am.
Saint Sauveur. France.
Salem. Mass.
Salopian Pippin. Eng.
Sam Young. Ireland.
Samtouchee. N. C.
Sapson.
Sartha's Yellow. France.
Savage's Cheese. Ga.
Savewell. N. Y.
Sawyer. Ill.
Sawyer Sweet.
Scarlet Crofton. Ireland.
Scarlet Leadington. Scot.
Scarlet Nonpareil.
Scarlet Pearmain. Eng.
Scarlet Sweet. Ohio.
Scarlet Tiffing. Eng.
Schaffer's Early. Penna.
Schoonmaker.
Schreveton Golden Pippin. Eng.
Sciota Beauty. Ohio.
Scollop Gilliflower. Eur.
Scotch Bridget. Eng.
Scott's Best. N. Y.
Schrivener's Red.
Seaconk Sweet. Conn.
Seaman's Sweet. N. Y.
Seaver Sweet.
Seedless. Vt.
(*Seek-No-Further* is *Autumn Seek-No-Further.*)
Seever. Am.
Selby Bellflower. Am.
Selma. Am.
Selwood's Reinette. Eng.
September. Penna.
Sergeant's Sweet. Mass.
Shaker Greening. N. H.
Shakespeare. Eng.
Sharpe's Greening. N. C.
Sheepnose, several varieties, probably American.
Shell. Va.?
Shepherd's Fame. For.
Sheppard's Sweet. Conn.
Shiawassee Beauty. Mich.
Shipley Green. Md.
Shippen's Russet. Penna.
Shockley. Ga.
Showy (Crab).
Simpson Sweet. Penna.
Sine-qua-non. N. Y.
Sink. Penna.
Sir William Gibbons. Eng.
Skunk. N. J.
Sleeping Beauty. For.
Sleight's Lady Apple. N. Y.
Slingerland Pippin. N. Y.
Smalley. Am.
Small's Admirable. For.
Smith's Cider. Penna.
Smokehouse. Penna.
Snediker.
Snepps'. Ind.
Somerset. Me.
Sommerset Lasting. Eng.
Sops of Wine. Eur.
Souisson Russet.
Soulard (Crab). Mo.
Sour Bough. Am.
Southern Lady. N. C.
Sovereign. Eur.
Spafford Russet. Ohio.
Spark's Late. Am.
Speckled.
Speckled Oley. Penna.
Spectator. N. Y.
Spice Russet. Ohio?
Spice Sweet. Am.
Sponge, two varieties.
Sprague.
Springer. Ohio.
Spring Grove Codlin. Eng.
Spring Pippin. N. Y.
Squire's Greening. Eng.
Staats' Sweet. N. J.
Stack. Ind.
Stackyard. Penna.
Stamford Pippin. Eng.
Stanard. N. Y.

Stanley. Ala.
Stanley's Winter Sweet. Me.
Stansill. N. C.
Star. Am.
Stark. Ohio.
Starr. N. J.
Star Reinette. Belg.
Steel's Sweet. Conn.
Stephenson's Winter. Miss.
Stevens' Gilliflower. Me.
Stillman's Early. N. Y.
Stillwater Sweet. Ohio.
Stirzaker's Early Square. Eng.
Stockade Sweet. Ohio.
Stone Pippin. Eng.
Stonewall Jackson. S. States.
Stonor Park. Eng.
Straudt. Penna.
Strawn. Va.
Streaked Pippin. N. Y.
Striped Beaufin. Eng.
Striped Belle et Bonne. Am.
Striped Holland Pippin. Hol.
Striped Mohawk. Am.
Striped Monstrous Reinette. Eng.
Striped Porter. Am.
Striped Shropsavine.
Striped Siberian (Crab).
Striped Winter Pearmain. Ky.?
Stroat. Am.?
Strode's Birmingham. Penna.
Strubel. Penna.
Stump. Del.?
Sturmer Pippin. Eng.
Stymus. N. Y.
Styre. Eng.
Sudbury Sweet. Mass.?
Suffolk Beauty. Am.
Sugar and Brandy. Eng.
Sugar Loaf Pippin. For.
Sugar Sweet. Mass.
Suisse. For.
Summer Bellflower. N. Y.
Summer Bellflower of Pennsylvania. Am.
Summer Broaden. Eng.
Summer Cheese. Am.?
Summer Golden Pippin. Eng.
Summer Hagloe. Am.
Summer Harvey.
Summer Janet. Ind.
Summer Limber Twig. N. C.
Summer Marigold. Eng.
Summer Pippin. Am.
Summer Pound Royal. Am.
Summer Queen. Am.
Summer Rambo (*Rambour Franc*). France
Summer Red Calville. France.
Summer Red Streak. N. Y.
Summer Reinette. Ger.
Summer Rose. Am.
Summer Sweet. Conn.
Summer Sweet Paradise. Penna.
Summer Thorle. Scot.
Summer White Calville. For.
Superb. N. C.
Superb Sweet. Mass.
Surprise. Eur.
Surrey Flat Cap. For.
Susannah. Am.?
Susan's Spice. Penna.
Sutton Beauty. Mass.
Swaar. N. Y.
Swasey. Ohio.
Sweeney Nonpareil. Eng.
Sweet and Sour.
Sweet Baldwin.
Sweet Belle Bonne.
Sweet Bellflower. Ohio.
Sweet Bellflower of Wyandot County. Am.
Sweet Doctor. Penna.
Sweet Fall Pippin. Am.
Sweet Greening.
Sweet Janet. Ind.
Sweet King. N. Y.
Sweet Mary. Tenn.
Sweet Pear. Ohio.
Sweet Pearmain. Ohio?
Sweet Pippin.
Sweet Queen. Penna.
Sweet Rambo. Penna.
Sweet Ribbed Gilliflower. Conn.
Sweet Romanite. W. States.
Sweet Russet. Am.
Sweet Russet of Massachusetts. Am.
Sweet Russet of Kentucky. Am.
Sweet Seek-No-Further. N. H.
Sweet Sponge. Ohio?
Sweet Vandervere. Am.
Sweet Willie. Ky.
Sweet Winesap. Am.
Sweet Winter Pennock. Ohio.
Swiss Reinette. For.
Syke-House Russet. Eng.
Sylvester. N. Y.
Table Greening. Me.
Talman's Sweet. R. I.
Tardive de Joncret. Belg.
Tart Bough. N. Y.
Tarvey Codlin. Eng.
Taunton. S. States.
Taunton Golden Pippin. For.
Tenderskin. S. States.
Ten Shillings. For.
Tenterden Park. For.

Terral's Late. S. States.
Tetofsky. Russ.
Teuchat's Egg. For.
Tewkesbury Winter Blush. N. J.
Them's Red Streak.
Thomas. Am.
Tiff's Sweet. New Eng.
Tillaqua. N. C.
Tinmouth. Vt.
Titus Pippin. N. Y.
Toccoa. Ga.
Toker's Incomparable. Eng.
Tolbert. Penna.
Tom Potter. Eng.
Toole's Indian Rareripe. Am.
Tower of Glammis. Scot.
Tower's Glory. For.
Townsend. Penna.
Townsend's Smiling Beauty. For.
Trader's Fancy. Penna.
Transcendent (Crab).
Transparent Codlin. For.
Transparent de Zurich.
Transport. Ind.
Trenton Early? Am.
Trescott Russet. Conn.
Trumbull Sweet. Ohio.
Trumpeter. Eur.
Tucker.
Tuebner's Cider. Mo.
Tuebner's Golden. Mo.
Tuft's. Mass.
Tulip. Hol.
Turkey Greening. Am.
Turk's Cap. For.
Turnoff Lane. N. J.
Tuscaloosa. Ala.
Tuscaloosa Sweet. Ky.?
Tuttle.
Twenty Ounce. Am.
Twin. Am.
Twitchell's Sweet. N. H.
Tyre Beauty. N. Y.
Tyroler Pippin. Switz.
Uncle John. Penna.
Union. Ia.
Unique. France.
Updegraff. Am.
Utter. W. States.
Vale Mascal Pearmain. For.
Van Buren. S. States.
Vance's Harvest. Ill.
Vandenabeele. Belg.
Vandernoot. Belg.
Vanderspiegel. Vt.
Vandevere. Del.
Vandervere Pippin.
Vandyne.
Van Mons Reinette. Eur.
Vaughn's Pippin. Eur.
Vaughn's Winter. Ky.
Vaugoyeau. For.
Vermilion Royée. France.
Versaillaise Reinette. France.
Victuals and Drink. N. J.
Violette. For.
Virginia Greening. S. States.
Virginia Quaker. Am.
Virginia Spice. Am.
Voss' Winter. S. States.
Wabash. Penna.
Waddell Hall. S. States.
Wadhurst Pippin. Eng.
Wagener. N. Y.
Walker's Yellow. Ga.
Walpole. Mass.
Waltham Abbey. Eng.
Wanstall. Eng.
Ward. Ohio.
Warfel (Crab). Penna.
Warfield. Ia.
Warner's King. For.
Warraschke de Guben. Russ.
Washington Royal. Mass.
Washington Strawberry. N. Y.
Washington Sweet. Mass.
Water. Penna.
Waterman's Sweet.
Watson's Dumpling. Eng.
Watson's Favorite. Am.
Waugh's Crab. Va.
Wax.
Waxen. Va.?
(*Waxen Apple* is *Belmont.*)
Wealthy. Minn.
Wealthy's Favorite. Mich.
Webb's Winter. S. States.
Wellford's Yellow. Va.
Well's Sweet. N. Y.
Western Spy. Ohio.
Westfield Seek-No-Further. Am.
West Grinstead Pippin. Eng.
Weston. Mass.
Wheeler's Extreme. Eng.
Wheeler's Russet. Eng.
Wheeler's Sweet. Ohio.
Whig. Am.
White Astrachan. Russ.
White Beauty. Ohio.
White Calville (*White Winter Calville*). France.
White Doctor. Penna.
White Incomparable. For.
White Juneating. Eur.
White Nonpareil. For.
White Paradise. Scot.
White Pippin. Am.
White Rambo. Penna.

White Romarin. Italy.
White Russet. Ireland.
White Spanish Reinette (*Reinette Blanche d'Espagne*). Spain.
White Spice. Penna.
White Spitzenberg. Penna.
White's Red Winter. S. States.
White Summer Pippin. For.
White Sweet. N. J.?
White's Winter. N. C.
White Virgin. For.
Whitewater Sweet. Ohio.
White Wine.
White Winter. Penna.
White Winter (Crab).
White Winter Pearmain. Am.
Whitman. Mass.
Whitmore's Pippin. For.
Whitney Russet. Am.
Wickham's Pearmain. Eur.
Wier Sweet. Am.
Wilfong. N. C.
William Penn. Penna.
William's Favorite. Mass.
William's Pippin. For.
William's White. Penna.
Willis's Russet. Mass.
Willis Sweet. N. Y.
Willow Twig. Am.
Willsboro. N. Y.?
Wilmot. For.
Wilson. Mich.
Wilson. W. Va.
Wilson's Summer. N. C.
Wilson's Volunteer. Am.
Winchell Sweet. Conn.
Windham Russet. Mass.
Wine. Del.
Winesap. Am.
Wing Sweet. N. Y.
Winn's Russet. Me.
Winslow. Va.
Winter Codlin. Eng.
Winter Colman. Eng.
Winter Gray Reinette, several varieties, probably foreign.
Winter Harvey. E. States.
Winter Hogg Island Sweet. N. Y.
Winter Lading. Eng.
Winter Maiden's Blush. Penna.
Winter Majettin. Eng.
Winter Pearmain, several varieties, partly foreign.
Winter Pippin of Michigan. Mich.?
Winter Pippin of Vermont. Vt.?
(*Winter Queen* is *Buckingham*.)
Winter Reinette. Ger.
Winter Strawberry. For.
Winter Sweet Paradise. Am.
Winthrop Greening. Me.
Winthrop Pearmain. Me.
Wisner. N. Y.
Woodland. S. States.
Woodring. Ohio.
Wood's Greening. N. J.
Wood's Sweet. Vt.
Woolfolks. Ky.?
Wormsley Pippin. Eng.
Wright. Vt.
Wright's Janet. Mo.
Wyken Pippin. Eng.
Yacht. Penna.
Yadkin. S. States.
Yahoola. Ga.
Yankee Spy. Am.
Yates. Ga.
Yellow Bellflower. N. J.
Yellow Foster. Am.
Yellow Ingestrie. Eng.
Yellow June. S. States.
Yellow Meadow. S. States.
Yellow Newtown Pippin. N. Y.
Yellow Siberian (Crab). For.
Yellow Sweet. Am.
Yopp's Favorite. Ga.
York. Mass.
York Imperial. Penna.
Yorkshire Greening. Eng.
Yost. Penna.
Zane. Va.
Zieber. Penna.
Zoar Greening. Ohio.

1,856 varieties: 1,099 American; 585 foreign; 172 origin unknown.

RECOMMENDED LIST IN 1872.

(t., recommended for table or dessert: m., for market; ci., for cider; co., cooking; k., for keeping; S., W., N., S't., for the South, West, North, and Southwest, respectively).

1872.

American Golden Pippin, t. m.
American Golden Russet, t.
American Summer Pearmain, t.
Baldwin, t. m.
Baltimore, t. m.
Belmont, t.
Ben Davis, m. S. S't.
Benoni, t. m.
Bentley Sweet, m. k.
Bethlehemite, t. m.
Bonum, t. m.
Broadwell, t. m.
Buckingham, t. m.
Campfield, ci. m. k.
Canada Reinette, t. m.
Carolina Red June, t. m.
Cogswell, t. m.
Dominie, t. m.
Drap d'Or.
Dutchess of Oldenburgh, co. m.
Dyer, t.
Early Harvest, t. m.
Early Joe, t.
Early Red Margaret, S.
Early Strawberry, t. m.
English Russet, m. k.
Esopus Spitzenburgh, t. m.
Evening Party, t. m.
Fall Harvey.
Fallawater, m. co.
Fall Pippin, t. m.
Fall Wine, t.
Fameuse, t. m.
Garden Royal, t.
Gilpin, m. k.
Golden Sweet, m. co.
Gravenstein, m. co.
Green Cheese, t. m. S.
Grimes' Golden Pippin, t. m.
Hall, t. m. S.
Haskell Sweet, t.
Herfordshire Pearmain.
Higby Sweet, t.
High Top Sweet, m. W.
Horse, m. co. S.
Hubbardston Nonsuch, t. m.
Hunt's Russet, t.
Jersey Sweet, t. m.
Jonathan, t. m.
Keswick Codlin, m. co.
King of Tompkins Co., t. m.
Klaproth, t. m.
Lady Apple, t. m.
Lady's Sweet, t. m.
Large Yellow Bough, t. m.
Late Strawberry, t. m.
Lowell, m. co.
McLellan, t.
Maiden's Blush, m. co.
Mangum, t. S.
Maverack Sweet, M. co. S.
Melon, t.
Monmouth Pippin, t. m.
Mother, t.
Newtown Pippin, t. m.
Newtown Spitzenburgh, t. m.
Nickajack, m. k. S.
Northern Spy, t. m.
Ohio Nonpareil, t. m.
Peach Pond Sweet, t. m. co.
Peck's Pleasant, t. m.
Pomme Grise, t. m. N.
Porter, t. m.
Primate, t.
Pryor's Red, t. m. S. W.
Rambo, t. m.
Rawles Janet, t. m. k. S't.
Red Astrachan, m. co.
Red Canada, t. m.
Rhode Island Greening, m. co.
Ribston Pippin, t. m. N.
Ross Nonpareil.
Roxbury Russet, m. k. N. W.
Shockley, m. k. S.
Smith's Cider, m.
Smokehouse, m. co.
Striped Winter Pearmain, t. m. S. S't.
Summer Pippin, m. co.
Summer Queen, m.
Summer Rose, t.
Summer Sweet Paradise.
Swaar, t.
Tetofsky, m. co.
Tewksbury Winter Blush, t. m. k.
Talman's Sweet, m. co.
Wagener, t.
Washington Strawberry, t. m.
Westfield Seek-No-Further, t. m.
White Pippin, t. m.

William's Favorite.
Willis Sweet, co. t. m.
Willow Twig, m. k. W. S.
Wine Apple, S.
Winesap, t. m. k.
Winter Sweet Paradise, t.
Yellow Bellflower, t. m.
Yellow Newtown Pippin, t. m.

Recommended List in 1845.

(t., recommended for table or dessert; m., for market; ci., for cider; co., for cooking; k., for keeping; S., W., N., S't., for the South, West, North, and Southwest, respectively).

1845.

American Golden Russet.
Balwin, N.
Canada Reinette, N.
Dutch Mignonne, N.
Early Harvest.
Early Strawberry.
English Golden Pippin (Golden Pippin), S.
English Russet, S.
Esopus Spitzenburgh.
Fall Pippin.
Fameuse, N. Pomme de Neige (Fameuse), N.
Green Newtown Pippin, S.
Golden Ball, N.
Golden Reinette, S.
Golden Sweet.
Gravenstein, S.
Jersey Sweet.
Lady Apple, S.
Ladies' Sweeting, N.
Large Yellow Bough, S.
Maiden's Blush, S.
Malla Carle, S.
Newtown Pippin.
Northern Spy, N.
Peck's Pleasant.
Porter, N.
Rambo.
Red Astrachan, N.
Rhode Island Greening, N.
Roman Stem, S.
Boston (Roxbury) Russet, N.
Sheep-Nose (American Golden Russet?), S.
Swaar, N.
Yellow Bellflower, S.

IV. Apples in Cultivation in 1892.

The following list is an inventory of the apples sold by nurserymen in North America in 1892. The list has been compiled from all the apple catalogues which have come to my table during the year, 95 in number. In order to show the geographic distribution of the varieties, the continent has been divided into 13 more or less natural areas, and the number of nurserymen who have listed any variety in the various regions is indicated by the figures in the respective columns. The number of catalogues at my command does not represent all the nurserymen who grew apple trees and issued lists in 1892, but it comprises all the leading ones, and save perhaps in the Northwest Region—the proportional results would probably not be greatly modified if more were to have been added. It may be urged that the geographic distribution of varieties cannot be determined by studying the lists of nurserymen who chance to live in a given region, because many nurserymen distribute their stock over a very wide area; but these nurserymen also have a home trade which, as a rule, determines the character of their lists more than the trade which is greatly foreign to their geographical boundaries. I am more and more convinced that the nurserymen's catalogues afford the truest basis for the study of the geographic distribution of varieties, especially in those older areas in which the business has become well established. In fact, the nursery exists because the people desire certain varieties of fruits, and in the long run its character becomes a reflection of the successful fruit-culture of its tributaries. In very new regions—as in the Mountain Region of the west—home nurseries are not yet developed, and there is no means of determining distribution and adaptation of varieties beyond collecting the experiences of individual growers.

I have made no attempt to determine the proper names of the varieties, preferring to let the lists stand as they are in order to show the names which are in commercial use. Some varieties appear under two or three different names. It was my first impulse to revise the nomenclature of the list in accordance with the rules of the American Pomological Society, but so many questions of priority and expediency at once arise in attempting to make an application of the rules, that I have felt myself unequal to the task; and as a committee or commission or the Department of Agriculture is already undertaking this revision, I am the more persuaded that an individual effort in that direction would be unfortunate because it would undoubtedly make decisions with which the committee could not agree, and confusion would arise. If, therefore, objectionable names occur in the following list, they must not be taken to represent any dissent on my part from the rules of the American Pomological Society, with which I am in most happy accord. For purposes of statistical inquiry, the list is undoubtedly worth more as it stands, for it represents the actual features of a commercial inventory.

Many of these varieties have appeared since the last revision of Downing (1872). Without attempting to determine synonymous names, I have marked with asterisks (*) those varieties which also appear under the same names in the Downing list. It will be seen at a glance that these starred entries are much less than half of the entire list. As a living inventory of American apples, comprising 878 entries, I hope that this record will serve a purpose for those who wish to speculate upon the tendencies in our horticulture.

AMERICAN APPLES, 1892.	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S. C., Ga.)	Gulf States. (Fla., Ala., Miss., La.)	Northwest. (Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
Aucubæfolia		1	1	2									
Acorn Greening					1								
*Ailes						1							
Akin									2				
Alaska									2		1		
Albemarle Pippin						2	1						
*Alexander	3	4	11	7	2	1	2	2	6		3		8
Alexander's Ice Cream					1								
Alpha									1				
Amassia													1
America		1	1			1							
*American Golden Russet	1	2	3	2	1				1				
*American Pippin						2	1		2				
*American Summer Pearman		1	1	2	3	1	1		3	1			4
Antonka					1								
Antonovka		1		2				1					
Arabian								1					
Arabskoe		1	2	1					1				1
Arkansas									2				
Arkansas Beauty				1	1	2			3				1
Arkansas Black			1	1	4	2	1		3	1	2		2
Arkansas Black Twig							1		1				
Arkansas Red			1										
Arnold's Beauty		1		1									
*Astrachan (*Red Astrachan*)		1					1		1				
Aucuba-leaved Reinette			1										
Aurora									2				
Autumn Bough				1					1				
Autumn Strawberry	1	2	6	5	1	1	1		5		1		2
*Autumn Swaar									1				
Babbitt			1	1					2				
*Bachelor's Blush			1										
Bailey's Crimson		1											
*Bailey's Sweet	2	3	5	5	2				8				2
*Baldwin	3	9	17	7	4	3	1		8		3		9
*Baltzley (*Baltzby?*)						1							
Baptist					2								
Barton's Favorite						2							
Bassett's Sweet													
Batingme					3								
Baxter		1	2										
*Beauty of Kent						1							
Beitigheimer (*Red Beitigheimer*)			2										
Belle de Boskoop		4	5	3	1		1		2				1

AMERICAN APPLES, 1892.	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S C., Ga.)	Gulf States. (Fla., Ala., Miss., La.)	Northwest. Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
Belle de Pontoise	. .	. .	1										
*Bellflower (*Yellow Bellflower*)	. .	1	1	. .	. .	2	1						
Bell Pippin	. .	. .	. .	1									
*Belmont, or Gate	. .	. .	2	2	. .	1							
*Ben Davis	3	5	16	7	9	9	3	1	13	3	5	. .	7
Benniger	. .	1	. .	1									
*Benoni	. .	1	7	5	8	2	1	. .	11	. .	1	. .	1
*Bentley Sweet	. .	. .	. .	1									
Berry Red	. .	. .	. .	. .	1								
Best Summer Sweet	. .	. .	. .	. .	1								
Bethel	2	3	2										
Big Rambo	. .	. .	.	1									
Big Romanite	. .	. .	. .	. .	1	. .	. .	. .	1				
Black	. .	.	. .	. .	2	.	. .	. .	1				
*Black Annette	. .	. .	. .	. .	. .	. .	. .	. .	1				
*Black Gilliflower	. .	. .	. .	. .	. .	. .	. .	. .	1				
Black Twig	. .	. .	. .	. .	4	1	1						
*Black Warrior	. .	. .	. .	. .	. .	1							
Black Wood	. .	. .	. .	1									
*Bledsoe (*Bledsoe Pippin?*) .	.	.	. .	. .	. .	. .	. .	. .	. .	1			
*Blenheim Pippin	1	. .	1										
Bliss	. .	. .	. .	. .	. .	.	. .	1					
Bloomless	. .	. .	.	. .	. .	. .	. .	. .	1				
*Blue Pearmain	.	. .	.	. .	.	. .	. .	. .	1				
Blushing Maid	.	. .	. .	. .	. .	1							
Bohemian Girl	. .	. .	. .	. .	. .	. .	. .	1					
Boiken	. .	. .	. .	1									
Bola	. .	. .	. .	. .	. .	. .	. .	. .	2				
*Bonum	. .	.	. .	. .	. .	1							
Bonus (*Bonum?*)	. .	. .	.	. .	. .	1							
*Borsdorf (*Borsdorffer?*) . .	. .	. .	1	. .	. .	. .	1	1	2				
Boskoff	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1		
Bostwick Queen	. .	.	. .	. .	. .	. .	. .	. .	2				
*Bottle Greening	1	2	3	4	.	. .	1						
Bough	. .	. .	1	. .		2							
Bracken	. .	. .	. .		. .	. .	. .	. .	2				
Bradford's Best	. .	. .	.		. .	. .	. .	. .	1				
Bramble's Early Red	. .	. .	. .	. .	.	1							
Branford's Best	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
Briar's Sweet	. .	. .	. .	. .	. .	. .	. .	. .	1				
Brightwater													
Brilliant													
Broadwell Sweet	. .	. .	. .	1	. .	. .	. .	. .	1				
*Brown	. .	. .	1										
*Brownlee's Russet	. .	. .	1										

AMERICAN APPLES, 1892.	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S C., Ga.)	Gulf States. (Fla., Ala., Miss., La.)	Northwest. (Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
*Buckingham					2		2		5	1			1
*Buff						1							
Buncombe						2	1		1				
Burnett			1										
Calvil d'Quillins			1										
*Camack's Sweet					1								
Campbell Sweet									1				
*Canada Reinette		1	1	2									2
Cannon (*Cannon Pearmain?*)						1							
*Cannon Pearmain					1	3							
Carolina Beauty						1							
Carolina Greening						3							
*Carolina Red June	1	1	5	3	2	2	2		4				1
Carolina Striped June									1				
Carolina Sweet June													
*Carolina Watson					1	2							
Carpenter's Horse									1				
Carpenter's Russian									1				
*Carter, or Royal Pippin					1				1				
*Carter's Blue					1	4	3		3	1			
Carthouse						3			2				
*Cayuga Red Streak (*Twenty Ounce*)			1						1				
*Celestia									1				
Changeable									1				
Charlamoff				1					1				
Charlottenthaler			1	2	1	1			3				
Chase Jelly									1				
Chase's Blush		1							1				
Chase's Golden		1											
Chatham Pippin	1												
*Chattahoochee						1			1				
Chattahoochee Greening						1							
*Cheese							1						
Chenango (*C. Strawberry*)			2	1	1								
Chickasaw									1*				
Childres' No. 1					1								
*Clarke Pearmain							1						
Clark's Orange		2	1	1									
*Clayton			1	2	2	2			6		2		
Clermont		2	1	1									
Clermont Pippin				1									
Climan Pippin													
*Clyde Beauty				1									
Coffelt									3				

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Coffelt Beauty				1		1			1				
Coffman					1								
*Cogswell				1									
Cole's Quince								1	3		4		
Colton				1									
*Colvert	2	2	3	4					5				1
Cook's Seedling									1				1
*Cooper									2		1		
*Cooper's Early White									4	1	4		
*Cooper's Market	1	4	5	3					1				2
Cooper's Redling			4										
*Cornell's Fancy			3						2				
Cove					1								
Cowan's Seedling						1							
Cowan's Winter						1							
*Cox's Orange Pippin			1										
*Cox's Pomona			1										
Crains									1				
*Cranberry Pippin	1	2	3	2	1								
*Crawford						2			2				
Crawford Pippin									1				
*Cullasaga						3			1				
Cullin's Keeper									2		1		
Cumberland					2								
*Currant Crab					1								
Dantzig's Ribbed			1										
Danver's Winter Sweet		1	1	1		1							
Delaware Late Spice						1							
Delaware Red Winter				4	1	1			1				
Delaware Winter	1	1	6		1								
*Detroit Red			1										1
Dickinson		1	4						1				
*Disharoon					1	1							
Ditmars													
Dr Briggs					2								
*Dr. Fulcher					1								
Dr. Haines									1				
Dr. Walker					4				1				
*Domine	2		4	3		3			4		1		1
*Double Flowering Crab						1							
*Duchess of Oldenburg	3	7	16	8	2	4	2	3	11		6		3
*Duke of Devonshire													2
Dulaney's Choice					1								
*Dumelow (_Dumelow's Seedling?_)									1				

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*Duncan	. .	. .	. .	. .	1								
Durham	. .	. .	. .	. .	. .	1							
*Dutch Mignonne	. .	. .	. .	. .	. .	1							
*Dyer	. .	. .	1	1									
Early Bough	. .	. .	1	. .	. .	1							
Early Colton	. .	. .	1	. .	1	3	. .	. .	3				
Early Edward	. .	. .	1	. .	.	1							
Early Golden Russet	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1		
Early Hagloe	. .	. .	1										
*Early Harvest	2	10	17	6	8	11	4	. .	12	2	7	. .	8
*Early Joe	. .	. .	1	1	2	1	. .	1	1				
Early June	. .	. .	. .	. .	. .	1							
Early Lippencotts	. .	. .	1	. .	. .	1							
*Early Margaret (*Early Red Margaret?*)	. .	. .	. .	. .	. .	.	1						
Early May	. .	. .	. .	. .	1	1	2	. .	1				
*Early Pennock	. .	. .	. .	1	. .	. .	. .	. .	6	. .	4	. .	1
Early Red June	. .	. .	1										
*Early Red Margaret	. .	. .	1	. .	. .	1							
*Early Redstreak	. .	. .	1										
Early Ripe	. .	2	4	3	1	4	1	. .	2	. .	. .	. .	2
*Early Strawberry	2	4	9	3	3	1	. .	1	5	. .	. .	. .	4
Early Sugar Loaf	. .	. .	. .	. .	1								
Early Sweet Bough	. .	. .	1										
Early Sweetheart	. .	. .	. .	. .	1								
Early Trenton	. .	. .	. .	1	. .	. .	. .	. .	2	. .	. .	.	2
Early White	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1		
Edelsdorfer	. .	. .	1										
Edgar Red Streak	. .	. .	. .	. .	. .	. .	. .	. .	1				
Elarkee	. .	. .	. .	. .	. .	. .	1						
Elgin Pippin	. .	. .	.	. .	. .	2	1						
Elkhorn	. .	. .	. .	. .	. .	. .	. .	. .	3				
Empress	. .	. .	. .	. .	. .	. .	. .	. .	1				
Empress of Russia	. .	. .	. .	. .	. .	. .	. .	. .	1				
*English Crab	. .	. .	. .	. .	. .	1							
English Golden Russet	. .	. .	. .	. .	1	. .	. .	. .	1	. .	1	. .	3
*English Russet	1	2	2	3	. .	. .	. .	. .	2				
Enormous	. .	. .	. .	1	1	1	1	. .	1				
Equinetelee	. .	. .	. .	. .	. .	5							
*Esopus Spitzenburg	1	4	9	3	. .	2	. .	. .	3	. .	. .	. .	7
Etowah, or Cooper's Red	. .	. .		. .	. .	1							
*Evening Party	. .	. .	. .	. .	. .	. .	. .	. .	1				
*Ewalt	. .	2	3	1									
Excelsior	. .	1	1	2	. .	1							
*Fallawater	1	5	12	5	1	5	.	. .	4				

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Fall Green Sweet					1								
*Fall Jennetting		2	3	2									
*Fall Orange		2	5	3					2				
*Fall Pippin	2	7	13	4	5	3	2		6				5
Fall Queen					5		1		3				
Fall Rnsset					1								
Fall Stripe, or Saxton									2				
Fall Sweet					1								
*Fall Wine					2				3				
*Fall Winesap									2				
*Fameuse	2	8	9	6	1	2	2	3	10		5		3
*Family					1	4							
Family Favorite									1				
*Fanny			1			2			2	1			
*Faust						1							
Ferris					1								
Fill Basket				1									
*Fink				1					3		1		
Fisher's Greening									1				
Flora Belle									2				
Flora Bellflower				1				1	3				
Florence									2				
*Flory				1									
Flower of May					1								
*Flushing Spitzenburg	1			1									
Fonville						1							
*Forest										1			
*Fourth of July		2		2	1	1			1				
Franklin Sweet		1	2						1				
*Freeman									1				
*Fulton					1				2		1		
*Fulton Strawberry									1				
Gano		1	7	6	2	1			5	1	1		
*Garden Royal				1									
*General Grant		3		4		1			3				1
General Lyon				1									
Geneton (*Fall Jennetting?*)									1				
Georgia June					1								
Gibb's Apple						3			1				
Gideon	1	2	4	4			1		1				
Gideon's Best									1				
Gill's Beauty									2				
*Gilpin	1			2					1		1		
Gilpin Romanite									1				
*Glendale					3								

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Gleen's Seedling													1
*Gloria Mundi					2				1				2
*Gloucester White						1							
*Golden			1										
Golden Beauty					1				2				
Golden Beauty of Paradise							1						
Golden Drop						1							
*Golden Pippin			1										1
*Golden Russet	2	3	13	3	1	1	3	1	5				3
*Golden Sweet	2	5	7	5	6	3	2		7		2		
Good Peasant								1					
Grand Mother				1				1					
Grand Sultan				2	1	2	2		1		1		
*Gravenstein	2	9	17	3	4	6	2		3	2			7
*Green Cheese					3		1						
Green Crank						1							
Green Newington (*Newtown?*) Pippin						1							
*Green Newtown Pippin			1			1							
*Green Sweet		1	1	2									
*Grimes Golden	2	4	14	6	4	6	1	1	4		1		1
*Grimes Golden Pippin			3	1	2	1	1		7		4		1
Grindstone						1			1				
Gundslow					1								
Haas	3	5	6	7	3	1		2	9		5		5
Hackworth							1						
*Hagloe			1	1	1								
*Hall							1		1				
Halladay's Seedling						1							
Hall's Red						1							
Hall's Seedling					3		1						
Hames' Seedling					1								
*Hamilton					1								
Hard Red						1							
Hargrove						1							
Harnes' July					1								
Harper					1	1							
*Harrison									1				
Harrison of Montgomery Co.						1							
Harry Kaump								1					
*Haskell Sweet			1										
Hastings		1		1									
Hartford Sweet									1				
Hatcher Seedling					1		1		2				
*Hawley									1				

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*Hawthornden	1			1					1				
Hayes' Wine			1						2				
Hay's			1			1							
Haywood						1							
Hendrick Sweet		1	1										
Hennipin									1				
Herefordshire Beffing			1										
*Herefordshire Pearmain				1									
Hesper Rose		2		1									
Hewes' Cider					1		1						
*Hewes' Vir. Crab (*Hughes*')		1	1	2	4	3	1		4	1			
Hibernal		1		2				2					
Hickerjacker													1
Hikes' Crab					1								
Hiley's Eureka						1							
*Hockett's Sweet						2							
*Holland Pippin			1	1	1		1		2				
*Holly					1	1							
Holman									1				
Hominy										1			
*Honey Greening		1		1	1								
Hopperson's Winter					1								
Hoopes									1				
*Hoover						2			1				5
Hopkins' Red						1							
*Horn					1	4	1						
*Hoss, or Horse					5	6	2		3				
Howard's Sweet								1					
Howsley's Winesap						1							
Hub			1										
*Hubbardston Nonsuch	2	8	13	4	2	1			4				3
Humphrey		1		1									
*Hunt Russet		1											
Huntington Sweet		1											
Huntsman's Favorite		1	1	3	2	1			9		3		
*Hurlbut	1	5	5	2			1						1
Hyde's King (of the West)		1		3					1				
Hyfill									1				
*Hyslop		4	3	5	3	2			6	1	4		2
Imperial									1		1		
Indian				2					2				
*Indiana Favorite				1									
*Ingram									4				
Iowa Beauty								1					
Iowa Blush								1	4		3		

American Apples, 1892.	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S. C., Ga.)	Gulf States. (Fla., Ala., Miss., La.)	Northwest. (Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
*Irish Peach	1												
Isham Sweet				1					5				
Ivanhoe		2	1	2									
Jacob's Sweet			2	1			1						
Jacob's Winter Sweet		1	1										
Janageskee						1							
Janet (*Rawle's Janet*)				1					5		7		
*Jarmanite				1							1		
Jar ell's Late Red						1							
*Jefferis		1	3	2					4	1	2		
Jenning's Florida						1	1						
*Jersey Sweet	2	5	7	4	2	1			2				
*Jewett's Best						1							
Johnston, or Lankford, of Kent Co Md.						1							
Jonali's Kee (*Junaluskee?*)					1								
*Jonathan	1	3	6	4	1	1		1	12	1	7		7
Jones' Favorite										1			
Jones' Seedling					2	1	1		2				
*Julian						3	1		2				
*Junaluskee					1	1							
July Queen						1							
*Kaighn's Spitzenburg					1								
Kansas Queen						1							
Kansas Sweet									1		1		
*Kentish Fillbasket	2												
Kent Island's Pine						1							
*Kentucky Cream					1								
Kentucky Longstem					3				1				
Kentucky Red					2				2				1
Kentucky Red Cider					1								
*Kentucky Streak (*Ky. Red Streak?*)					2		2		3				
Kentucky Wonder							1						
Kernodles Winter					1								
*Keswick Codlin	2	3	7	4	1		1		8				3
Key's Red						1							
*King (Tompkins)	3	8	15	5	3	1	3		6				7
King Wagener													1
Kinnard									1				
Kinnard's Choice					4	2	2		3				
*Kittageskee					1	2							
*Knowles' Early			1			1							
Kocher			1										
Kossuth									2				

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*Krauser	..	1	1	1									
*Lady	1	5	2	3	3	2	2	..	1	..	..	..	4
Lady Elgin	..	2	1	3	1	..	..	..	1				
*Lady Finger	..	..	..	..	3	..	1						
Lady Henniker	..	2	2	2									
Lady's Choice	..	..	..	..	..	1							
Lady Spitzenburg	..	..	..	..	..	..	..	..	..	..	..	..	1
*Lady Sweet	..	6	5	2	..	1	..	..	3	..	..	..	2
Lake's Winter	..	..	..	..	..	..	..	..	..	..	1		
*Lane Sweet	..	..	..	..	..	..	..	..	1				
Lanier	..	..	..	..	..	2							
Lankford	..	1	3	..	..	2	..	..	1				
Lankford Seedling	1	2	2	1	1	1	1	..	1				
*Lansingburg	..	..	..	1	4	..	..	..	4	..	1		
Large Jersey Sweet		1											
*Large Red Siberian Crab	..	2	..	3	..	..	..	..	2				
Large Striped Pearmain	..	..	..	1	1	1	2	..	4				
*Large Sweet Bough (*Large Yellow Bough*)	1	..	1	1									
Large Yellow Siberian	..	1	..	1									
*Late Strawberry	..	..	2										
*Laurens Greening	..	..	..	..	1	1							
Lawler	..	..	..	..	..	..	..	..	1				
*Lawver	..	1	2	4	6	6	1	..	9	..	2	..	5
Lead	..	..	..	..	..	..	..	1					
*Limber Twig	..	..	1	..	4	4	1	..	6	..	..	..	3
Limburger	..	..	1										
Lincoln	..	..	..	..	..	..	..	..	..	1			
Little Red Romanite	..	..		..	1	..	..	..	1	..	..	..	1
Little Romanite	..	..	..	..	..	..	..	..	1	1			
Little Seedling	..	..	..	..	..	..	..	..	2				
*London Pippin	..	..	..	..	..	1	..	..	1				
Longfield	1	3	7	5	..	..	..	2	3	..	1		
*Long Island Russet	..	..	1										
Looker's Winter	..	..	..	..	..	..	..	..	1				
Lord Nelson	..		1										
*Lord Suffield	..	..	1										
*Lowell (Pippin)	..	2	4	4	1	..	..	..	4	..	3	..	1
Loy	1	..	..	2	..	1	..	..	5	1			
*Lyman's Pumpkin Sweet	..	..	1										
Magnum Bonum	..		..	..	..	3	..	..	1				
Magog	..		..	..	..	..	..	..	1				
Magog Red Streak	..	2	2	1									
*Maiden's Blush	2	6	17	7	8	6	3	..	11	1	6	..	4
*Mala Carle	..	..	..	..	1								

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*Mamma	..	..	..	..	..	2							
Mammoth Black Twig	..	..	1	1	..	1	1	..	4				
Mammoth Black Twig of Arkansas	..	..	..	..	1								
Mammoth Pippin	..	..	..	..	..	..	..	..	2				
*Mangum	..	..	..	..	2	3	1	..	1				
Mann	3	6	14	8	5	2	1	..	8	..	6	..	5
*Marengo	..	2	1	2	..	1	..	..	..	..	1		
Marie Pinel de la Toule	..	..	1										
Marigold	..	..	1										
*Marshall's Red	..	..	..	..	..	..	..	..	1				
Marston Red	..	..	..	..	..	..	..	..	1				
Martha	..	4	1	4	1	..	..	..	5	..	1	..	1
Martha Washington	..	..	..	..	..	..	..	..	1				
Mary Womack	..	..	..	..	1								
Mason's Orange	..	..	..	..	..	..	..	..	1	..	1		
Mason's Stranger	..	..	..	..	..	2	..	..	1				
*Mattamuskeet	..	..	..	..	..	1							
*Maverick's Sweet	..	..	..	..	2	2	2	..	..	1			
*Maxey	..	..	..	..	4								
*May	..	..	..	..	1	1	1						
May of Myers	..	..	..	..	..	..	..	..	1				
May Pippin	..	..	..	..	..	1							
McAfee	..	..	..	..	..	..	..	..	2				
McCuller's Winter	..	..	..	..	..	1							
McIntosh Red	2	6	9	5	..	..	1	..	5	..	1		
*McKinley	..	..	..	..	..	..	..	..	1				
McMahon's White	..	1	..	2	..	..	..	3	4	..	..	..	1
McNash	..	..	..	..	..	2							
Menary	..	..	..	1									
Merkley's Red	..	..	..	..	..	..	..	..	..	..	..	..	1
*Michael Henry Pippin	..	..	..	..	..	..	..	..	1				
*Milam	..	..	..	2	3	..	..	1	5	..	3		
Milding	..	1	4	1									
Minch	..	..	2										
*Minkler	..	..	..	1	1	..	..	..	7	..	1		
Minnesota	..	..	1										
Missouri Pippin	..	1	3	3	2	2	1	..	11	1	6	..	2
Missouri Superior	..	..	..	..	..	..	1	..	1				
Mitchell of Dorchester	..	..	..	..	..	1							
Missouri Janet	..	..	..	..	1								
*Monmouth Pippin	..	2	5	2	..	..	..	..	1				
Monstrous Pippin	..	..	..	..	..	..	..	..	1				
*Montreal Beauty	..	2	1	3	..	1	..	..	2	1	1		
Moon	..	..	..	..	..	1							

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Moore's Favorite	. .	. .	. .	. .	1								
*Moore's Sweet	. .	. .	. .	1	1								
Moregi	. .	. .	. .	1									
*Mother	. .	2	1	. .	. .	1	.	. .	5	. .	. .	. .	1
Moultree's Winter	. .	. .	.	. .	. .	3							
Mrs. Bryan	. .	. .	. .	. .	.	1							
*Munson's Sweet	. .	3	6	5	. .	. .	. .	. .	1				
*Murphy	. .	1											
Myers	. .	. .	. .	. .	. .	1							
Nansemond Beauty	. .	. .	1	. .	1	4	1	. .	1				
*Nantahlee	. .	. .	. .	. .	. .	1							
Nashville Mammoth	. .	. .	. .	. .	1								
Nautahala (*Nantahlee?*)	. .	. .	. .	. .	1								
Neils Keeper	. .	. .	. .	. .	. .	. .	. .	. .	1				
Nelson Rock	. .	. .	. .	. .	. .	1							
Nero	. .	. .	3	. .	. .	3	. .	. .	1	. .	. .	. .	1
New Brunswick	. .	1	. .	1									
Newell		. .	. .	. .	. .	. .	. .	1					
*Newtown Pippin	2	3	8	2	2	. .	1	. .	5	. .	. .	. .	4
*Newtown Spitzenburg	. .	. .	. .	. .	. .	. .	. .	. .	1				
New York Early	. .	. .	. .	. .	1								
New York Pippin	. .	. .	2	. .	. .	. .	. .	. .	1				
*Nickajack	. .	2	2	1	3	5	2	. .	4	1	. .	. .	5
Nodhead	. .	2	1	2									
*Nonsuch	. .	. .	1										
North Carolina Crab	. .	. .	. .	. .	. .	. .	1						
North Carolina Limber Twig	. .	. .	. .	.	. .	. .	. .	. .	1				
*Northern Spy	3	8	16	7	4	2	1	. .	8	. .	2	. .	7
*Northern Sweeting	. .	. .	.	. .	. .	1							
North Star	. .	. .	. .	. .	. .	. .	. .	. .	1				
Northwestern Greening	. .	1	. .	4	. .	. .	. .	2	2				
*Norton's Melon (*Melon*)	. .	. .	. .	. .	1								
*Nottingham (*N. Pippin?*)	. .	. .	2										
Nyack Pippin	. .	.	1										
Occident	. .	. .	1	. .	. .	. .	. .	. .	1				
*Oconee Greening	. .	. .	. .	. .	. .	3	1						
Ohio Beauty	. .	. .	1										
*Ohio Nonpariel	. .	. .	. .	2	. .	. .	. .	. .	2				
Ontario	2	. .	1										
*Orange	. .	2	1	2	. .	1	. .	.	1				
*Orange Pippin	. .	.	4										
Orion	. .	1	. .	2									
Orrick	. .	. .	. .	. .	2								
*Ortley	. .	. .	. .	. .	1	. .	. .	. .	2	1	1	. .	4
*Ortley Bellflower (*Ortley?*)	. .	. .	. .	. .	. .	. .	. .	. .	1				

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*Osceola									1				
Ostrokoff		1		1									
Ozark									1				
Paine					1								
Painted Lady													
Palmer Greening			1										
Palmer's Seedling													1
Palouse									1				1
Paragon			1		2		1						
Parry's White			2			1							
Parson's Sweet		1	1										
Payne's Keeper									1				
*Peach		3	4	3					1				
*Peach Pond Sweet									1				
*Pear Apple						2			1				
Pearmain			1										
Peasgood Nonsuch			1										
*Peck's Pleasant	1	7	7	3	1				1				4
Peck's Spice			2										
Pedimont Pippin						1							
Peerless								1					
*Pennock					3								
Pennsylvania Red Streak					2				5		2		
*Perry Russet		1	1						3		3		1
Peter				1									
Peter Gideon					1								
Peter the Great									2				
Pewaukee	3	6	2	6	3	1	1	2	11		4		5
*Phœnix	1												
Pickard Bros.													
*Pickard's Reserve									1				
Picket					1								
Pilot						3							
Pioneer											1		
Platt								1					
Plum's Cider		2	4	4				1	4		3		
*Pomme Gris	1	2	3	2					1				
Pond Sweet									1				
*Poorhouse					3				1				
Popoff's Streaked							2						
*Porter	1	8	12	3	3	2			4				3
*Pound Royal							1						
*Pound Sweet		2	3		1				2				
Pramsdill's Sweet (*Ramsdell Sweet?*)					1								

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Price's Sweet	. .	. .	. .	. .	. .	. .	. .	1	4				
Pride of Texas		. .	. .	. .	. .	1							
*Primate	1	5	2	3	. .	1	1						
Prince Imperial Rudolph	. .	. .	1										
Princess Royal	. .	. .	. .	1									
Princess Louise	1	. .	3										
*Prolific Sweeting	. .	. .	. .	1									
*Pryor's Red	. .	. .	1	1	1	3	1	. .	4	. .	. .	. .	1
*Pumpkin Russet	. .	. .	. .	. .	1								
*Pumpkin Sweet	. .	3	5	1	1	1							
Pyle's Red Winter	. .	. .	. .	. .	. .	. .	. .	. .	1				
Quaker Beauty	.	1	. .	4	. .	1	. .	. .	3				
Quebec Winter Sweet	. .	1	1	. .									
Queen Anne	. .	. .	. .	. .	1								
Queen's Choice	. .	1	.	1	. .	1	. .	. .	1				
Quinton	. .	. .	1										
Ragan Yellow Horse	. .	. .	. .	. .	. .	. .	. .	. .	1				
Rainbow	. .	. .	.	. .	. .	. .	. .	. .	1				
*Rambo	1	4	9	7	6	2	1	. .	12	. .	4	. .	4
*Ramsdell Sweet	. .	. .	. .	. .	.	. .	. .	. .	4	. .	2		
*Rawle's Janet (*See Janet*)	. .	3	7	5	7	5	3	1	5	. .	. .	. .	4
Rebel	. .	1	1	. .	.	. .	1	. .	1				
Red Annis	. .	1	. .	1									
*Red Astrachan	3	8	17	7	5	11	3	1	11	1	6	. .	9
Red Belle	. .	. .	. .	. .	.	. .	. .	. .	2				
*Red Bellflower	. .	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1
Red Bietigheimer	2	4	15	6	3	. .	2	. .	6	. .	.	. .	6
*Red Canada	1	4	5	4	. .	. .	. .	. .	2				
Red Cider	. .	. .	2										
*Red Cheek (Pippin)	. .	. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	1
Red Crab	. .	. .	. .	.	2	. .	. .	. .	1				
Red Doctor	. .	. .	. .	. .	. .	1							
Red Fall Sweet	. .	. .	. .	. .	1								
*Red Gilliflower	. .	. .	.	. .	1	. .	. .	. .	1				
*Red Horse	. .	. .	. .	1	1	. .	1						
*Red June	. .	. .	. .	. .	1	7	1	.	8	2	5	. .	9
Red Lady Finger	. .	. .	. .	. .	1	. .	. .	. .	1				
Red Lake	. .	. .	. .	. .	. .	.	. .	1					
Red Leaf Russet	. .	. .	1										
Red Limber Twig	. .	.	. .	. .	2	1	1	. .	1				
Red Margaret	. .	. .	. .	. .	. .	1							
Red May	. .	. .	. .	. .	. .	. .	1	. .	. .	1			
Red Rambo	. .	. .	. .	. .	1				1				
Red Riches	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	.	1
Red Romanite	. .	. .	1	.	. .	1	. .	. .					
*Red Russet	. .	. .	3	1	2								

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*Red Siberian		1	2			1	2		1				4
*Red Stripe				1									
Red Sweet Pippin									1				
Red Transparent				1									
Red Waycross						1							
Red Wine								1	1				
Red Winter Pearmain					2					1			
*Red Winter Sweet					2				2				
Regans Yellow									1				
*Reinette de Caux													2
Reinette Franche					2								
Reinette de Luxemburg			1										
Reinette de Regmalard			1										
Reinette Superfine			1										
Repka				1									
Repka Malenka									1				
Revel									1				
Rhenish May					2				1				
*Rhode Island Greening	2	9	14	5	1	2	2		5				8
*Rhodes' Orange						3							
Riabinouka							1						2
*Ribston Pippin	1	2	2	1									
*Richard's Graft									1				
Richland Winter Sweet									1				
*Ridge Pippin			3			1							
Robertson's White						1							
Robinett						1							
Robinson's Superb							1						
*Rock Pippin									1				
Rolfe		3	4	2									
*Romanite					3	3	1						
Roman Red Streak					1								
*Roman Stem			3	2				3	6		1		
*Rome Beauty	1	3	6	5	8	5	3		10	1	5		3
Rosemarin							1						
Ross Apple					2								
*Roxbury Russet	2	9	12	4	1				4				6
Royal Limber Twig						1	1						
Royal Pippin							1						
Royal Red					1								
*Rubicon (*Paw Paw*)		2	2	3									
Russet		1			1								
*Russian Transparent		1	1		1								
Rutledge										2			
Sabaros			1										

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*Saint Lawrence	2	3	6	3	. .	1	. .	1	3				
Saint Peter's	. .	.	. .	. .	. .	. .	1	. .	1				
Sally Gray	. .	.		.	. .	. .	. .	. .	. .	1			
Salome	1	3	7	5	4	1	. .	.	7	. .	2	. .	1
Santa Clara King	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	2
Santouche	. .	.	. .	. .	1								
Saunders'	. .	. .	. .	. .	1								
Sauta	. .	.	. .	. .	1	1							
Saxton	. .	. .	. .	. .	. .	. .	. .	1					
Scarlet Cranberry	. .	. .	. .	. .	. .	1	. .	. .	1				
Scott's Winter (*Scott's Red Winter*)	2	1	4	4	. .	. .	. .	. .	2				
*Seedless	.	. .	. .	1	1								
*Seek-no-Further	1	4	6	3	2	. .	2	. .	3				
*Seevers	. .	. .	. .	. .	. .	.	. .	1					
Shackleford	. .	. .	. .	1	1	. .	. .	. .	4	. .	1		
Shannon	. .	.	. .	. .	1	1	2	. .	4	1			
Sharp's Russet	. .	1	1										
*Sherwood's Favorite, or Chenango Strawberry	1	3	6	4	3	1	. .	. .	6	. .	2	. .	3
*Shiawassee Beauty	1	1	2	3									
Shields	. .	. .	. .	. .	.	.	. .	. .	1				
Shirley	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
*Shockley	. .	.	1	. .	5	10	3	. .	5	3			
Shockley Hill	. .	.	. .	. .	. .	1							
*Siberian Crab	. .	.	. .	. .	1	1							
Simmons' Crab													
Simmons' Red	. .	. .	. .	. .	. .	3	1						
Skinner's Pippin	. .	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	4
Sladkaja	.	.	. .	. .	. .	. .	1						
Small	. .	. .	.	. .	1								
Small Romanite	. .	. .	. .	. .	1	. .	. .	. .	2				
*Small's Admirable	. .	.	1										
*Smith's Cider	1	3	16	5	7	4	3	. .	9	1	2		7
*Smokehouse	. .	2	10	3	1	4	1	. .	2				
Smoky Twig	.	. .	. .	.	1								
*Snow (*Fameuse*)	1												
Sonoma Seedling	. .	. .	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	3
*Sops of Wine		4	5	4	3	2	2	1	10	. .	1	. .	2
*Soulard	. .	1	1	2	. .	. .	.	. .	2	. .	1		
Southern Limber Twig	. .	. .	. .	.	. .	. .	. .	. .	. .	1			
Southern Mammoth		.	. .	.	1								
*Spark's Late	. .	. .	. .	. .	1	1							
Spice	. .	. .	. .	. .	. .	1							
*Spice Sweet	. .	. .	. .	1	. .	1	. .	. .	1				

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*Stannard	. .	. .	. .	. .	. .	. .	. .	. .	2				
*Stark	1	4	6	6	4	4	1	. .	7	. .	2	. .	3
Stayman's Sweet	. .	. .	. .	. .	. .	1							
Stenkyrk	. .	. .	1										
Stevens	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
Stevenson	. .	. .	. .	. .	. .	3							
Stevenson's Red	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
*Stevenson's Winter	. .	. .	. .	. .	. .	4	2	. .	2				
Steward	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
Stott's Russet	1												
Strawberry	. .	. .	. .	. .	. .	. .	. .	1	2				
Stribling	. .	. .		. .	3								
Striped Gilliflower	. .	. .	. .	. .	. .	. .	. .	. .	1				
Striped July	. .	. .	. .	. .	. .	. .	. .	. .	1				
Striped June	. .	. .	. .	. .	2	1	1	. .	. .	1			
*Striped Winter Pearmain	. .	. .	. .	. .	. .	1	2						
Stuart's Golden	. .	. .	. .	. .	. .	1	1	. .	1				
*Stump	1	4	8	3	1	1	. .	. .	2	. .	1	. .	3
*Summer Cheese	. .	. .	. .	. .	. .	. .	1						
Summer Extra													
*Summer Hagloe	. .	. .	1	. .	. .	2							
Summer King	. .	. .	. .	. .	3								
Summer Pearmain	. .	. .	1	. .	3	3	. .	. .	2	. .	1		
*Summer Pippin	. .	1	1										
*Summer Pound Royal	. .	. .	. .	. .	1								
*Summer Queen	1	1	3	3	5	5	2	. .	4	2	2	. .	1
*Summer Rambo	. .	. .	1	1	1	1	. .		1				
Summer Red	. .	. .	. .	. .	1	. .	1						
*Summer Rose	. .	. .	3	1	2	1	. .	.	2				
*Summer Sweet Paradise	. .	. .	. .	. .	. .	1							
*Sutton Beauty	2	4	7	4	. .	. .	. .	.	3	. .	2		
*Swaar	2	2	6	2	1	. .	. .	. .	. .	. .	. .	. .	5
Swayzie Pomme Grise	1												
Sweet Alice	. .	. .	. .	. .	1								
*Sweet Bough (*Large Yellow Bough*)	1	8	12	4	5	3	2	. .	5	. .	. .	. .	3
Sweet Dixon	. .	. .	. .	. .	. .	. .	. .	. .	. .	1			
*Sweet Janet	. .	. .	. .	1									
Sweet June	.	.	. .	1	1	. .	. .	. .	10	. .	3	. .	2
Sweet Limber Twig	. .	. .	. .	. .	. .	. .	1						
Sweet Nonsuch	. .	. .	. .	. .	. .	. .	. .	. .	1				
*Sweet Pear	. .	. .	. .	. .	. .	. .	. .	. .	2				
*Sweet Russet	. .	. .	. .	1	. .	. .	. .	1	2				
*Sweet Vandevere	. .	. .	. .	1									
Sweet Waycross	. .	. .	. .	. .	. .	1							

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Switzer	. .	1	. .	1	. .	. .	1	2	2				
Sylvan Sweet	. .	. .	.	. .	. .	. .	. .	. .	1	. .	1		
Talbot	. .	. .	. .	. .	. .	.	. .	. .	. .	1			
*Talman Sweet	2	8	11	7	1	1	1	3	10	. .	2	. .	3
*Taunton	. .	. .	. .	. .	1	5	1						
Telfer Sweet	. .	. .	. .	. .	.	. .	. .	1	1				
*Tetofsky	3	6	14	7	3	1	2	. .	6	. .	. .	. .	3
Tevokee	1												
*Tewkesbury Winter Blush	. .	2	2	1	. .	.	. .	. .	1				
Thalor	. .	. .	. .	. .	. .	. .	. .	1					
Thompson	. .	. .	. .	. .	1								
Thornton's Winter	. .	. .	. .	. .	. .	. .	1						
*Tillaquah	. .	. .	. .	. .	. .	. .	1						
Titovka	1	1	1	2	. .	.	.	.	1				
Tittonka	. .	. .	. .	. .	1								
*Titus (*Titus Pippin ?*)	. .	. .	. .	. .	. .	. .	. .	1	1				
Toll de Rhin	. .	. .	1										
*Townsend	.	.	1										
*Transcendant Crab	. .	5	3	5	6	3	1	. .	6	3	2	. .	4
Transparent	. .	. .	. .	. .	1								
*Tufts	. .		. .	. .	1								
Tuft's Baldwin	. .	. .	1										
*Tulpehocken (*Fallawater*)	1	.	1	. .	1	. .	. .	. .	1	. .	1		
*Turn o' Lane	. .	. .	. .	. .	. .	1							
*Tuscaloosa (*T. Seedling ?*)	. .	. .	.	. .	1	2	. .	. .	1				
*Tuttle	. .	1											
*Twenty Ounce	2	5	12	4	2	1	1	. .	4	. .	1	. .	5
Ukrainskol	. .	1	. .	1									
Ulster's Red	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1
Uncle Ben	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	
*Utter	. .	. .	. .	. .	. .	.	. .	1					
Utter's Large Red	. .	2	2	1	.	. .	. .	1	5	. .	2		
*Vandevere	2	2	3	2	. .	1	. .	. .	3	. .	. .	. .	2
Vandevere of Pennsylvania	. .	.	. .	. .	. .	. .	. .	. .	1				
Vandevere Improved	. .	. .	. .	. .	. .	. .	. .	. .	1				
Van Wyck Crab	. .	1	1	1	. .	. .	. .	. .	. .	. .	. .	. .	1
Van Wyck Sweet	. .	3	1	3	. .	. .	. .	. .	2				
Varngal	. .	. .	. .	1									
*Vaughn's Winter	. .	. .	. .	. .	2								
Victoria Sweeting	. .	1	1										
*Violet	. .	. .	. .	. .	. .	.	.	. .	. .	. .	. .	. .	1
*Virginia Greening	. .	. .	. .	. .	. .	. .	2	1	3	. .	. .	. .	1
Virginia Grixon	. .	. .	. .	. .	. .	1							
Virginia Leather Coat	. .	. .	. .	. .	. .	1							
Von Gohren	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1

AMERICAN APPLES, 1892.	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S C., Ga.)	Gulf States. (Fla , Ala., Miss., La.)	Northwest. (Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
*Wagener	3	5	8	8	1	2	1		7				5
Walbridge	2	6	13	6	2	1	1	2	10		6		5
Walker's Beauty				1									
Walker's Pippin						1							
Wallace Howard						2							
Walter's Sweet					1								
Wandering Spy									1				
*Washington Strawberry			2			1							
*Water									1				
Watwood					2								
*Waugh's Crab					1	1							
*Wealthy	3	6	12	8	5	1	2	3	10	1	6		6
Webb's Seedling					1								
Webb's Winter					1				1				
*Wellford's Yellow Winter						2							
Western Beauty		3	1	2	1				1				
Westfield Seek-no-Further	1		2	1					2				
White					1								
White Arctic									1				
*White Astrachan													6
White Bellflower									3				
White Carver			1										
*White Doctor			3										
White Hoss									1				
White June									1				
White Krim									1				
White Pearmain									1				
*White Pippin		2	4	3	1				5				
*White Rambo									1				
Whitescarver					1								
White Sugar				3		1							
White Waycross					1								
*White Winter Pearmain			1	1	1				8		3		9
Whitney (*No. 20*)		1		2	2			1	6	1	5		1
Whitney's Seedling		3		2									1
Williams		1											
Williams' Early Red			2										
Williams' Fair					1								
*Williams' Favorite		5	4	1	1	2			1				5
*Willis Sweet			1										
Willow						1							
*Willow Twig		1		3	1	1	1	2	10		1		
Windsor Chief								1					
*Wine			1		1	4							
*Wine Sap	1	4	15	5	7	8	4		12	2	7		8

AMERICAN APPLES, 1892	Ontario and eastward.	New England.	N. Y., N. J. and Penna.	Northern Central States. (Mich., Ohio and Ind.)	Southern Central States. (Ky., W. Va. and Tenn.)	So. Atlantic States. (Del., Md., Va., N. C., S. C., Ga.)	Gulf States. (Fla., Ala., Miss., La.)	Northwest. (Wis., Minn., Dak., Iowa.)	Central Mississippi Valley. (Ill., Mo., Ark.)	Texas Region. (Texas, N. Mex., Ariz.)	Plains. (Kansas, Nebraska.)	Mountain Region. (Mont., Idaho, Wyo., Col., U., Nev.)	Pacific Region. (Wash., Ore., Cal.)
Winter Blush	. .	. .	1										
Winter Cheese	. .	. .	. .	. .	1								
Winter Citron	. .	. .	1										
Winter Golden Sweet	. .	. .	.	1	. .	. .	. .	1	1				
Winter Greening	. .	. .	. .	. .	1	. .	1	. .	1				
Winter Grixom	. .	.	. .	. .	. .	1							
*Winter Maiden's Blush	. .	. .	. .	1									
Winter May	. .	. .	. .	. .	. .	. .	. .	. .	1				
*Winter Pearmain	. .	. .	. .	. .	2	.	. .	. .	1				
*Winter Queen (*Buckingham*)	. .	. .	1	. .	.	1							
Winter Streak	. .	. .	. .	. .	. .	. .	. .	. .	1				
Winter Striped	. .	. .	1										
*Winter Sweet Paradise	.	. .	. .	2	1	2	. .	. .	5				
Winter Wine	. .	. .	. .	. .	1								
Wolf River	1	3	6	5	1	. .	1	3	8	. .	. .	. .	1
Wythe	. .	. .	. .	. .	. .	. .	. .	.	1				
*Yates	. .	. .	. .	. .	3	6	2	. .	2	1			
Yellow Belle	. .	. .	. .	1									
*Yellow Bellflower	2	3	8	4	7	. .	1	. .	9	. .	1	. .	9
Yellow Bough	. .	. .	. .	. .	. .	1							
Yellow Forest	. .	. .	. .	. .	. .	. .	1						
Yellow Horse	. .	. .	. .	. .	. .	1	1	. .	1	2			
*Yellow June	. .	.	. .	. .	. .	. .	1						
Yellow May	. .	. .	. .	. .	1	1	1	. .	2				
Yellow Newington (*Newtown ?*) Pippin	. .	. .	. .	. .	. .	1							
*Yellow Newtown Pippin	. .	. .	1	. .	. .	1	. .	. .	. .	. .	. .	. .	5
*Yellow Siberian	. .	2	2	1	1	1	1	. .	2	. .	. .	. .	3
*Yellow Sweet	. .	.	. .	. .	. .	.	. .	. .	. .	1			
Yellow Transparent	3	5	16	6	5	9	3	3	10	. .	2		
*Yopp's Favorite	. .	. .	. .	. .	1	2							
*York	.	.	. .	. .	. .	.	. .	. .	. .	. .	1		
*York Imperial	. .	3	10	4	. .	4	. .	. .	5	. .	2	. .	1
York Stripe	. .	. .	. .	. .	. .	1							

Whole number of entries, 878.

Whole number sold in Ontario and eastward, 97; In New England, 192; New York, N. J. and Penna., 274; Northern Central States, 248; Southern Central States, 275; South Atlantic States, 275; Gulf States, 149; Northwest, 62; Central Mississippi Valley, 381; Texan Region, 51; Plains, 94; Pacific Region, 137.

The twelve most popular varieties are: Early Harvest, sold by 86 nurseries; Red Astrachan, 82 nurseries; Ben Davis, 79 nurseries; Maiden's Blush, 71 nurseries; Baldwin, 65 nurseries; Duchess of Oldenburg, 65 nurseries; Wealthy, 63 nurseries; Yellow Transparent, 62 nurseries; Mann, 58 nurseries: N. Spy, 58 nurseries: Smith's Cider, 58 nurseries; Gravenstein and Walbridge, 54 nurseries.

Most popular varieties in Ontario and Eastward: Alexander, Baldwin, Ben Davis, Duchess of Oldenburg, Fameuse (and *Snow*), Haas, King, Mann, N. Spy, Pewaukee, Red Astrachan, Tetofsky, Wagener, Wealthy, Yellow Transparent, all receiving 3 votes.

In New England: Baldwin, 9; Early Harvest, 10; Gravenstein, 9; Rhode Island Greening, 9; Roxbury Russet, 9 votes or catalogues.

New York, New Jersey and Pennsylvania: Baldwin, 17; Ben Davis, 16; Duchess of Oldenburg, 16; Early Harvest, 17; Gravenstein, 17; Maiden's Blush, 17; N. Spy, 16; Red Astrachan, 17; Smith's Cider, 16; Yellow Transparent, 16 votes.

Northern Central States: Alexander, 7; Baldwin, 7; Ben Davis, 7; Duchess of Oldenburg, 8; Haas, 7; Maiden's Blush, 7; Mann, 8; N. Spy, 7; Rambo, 7; Red Astrachan, 7; Talman Sweet, 7; Tetofsky, 7; Wagener, 8; Wealthy, 8 votes.

Southern Central States: Ben Davis, 9; Benoni, 8; Early Harvest, 8; Maiden's Blush, 8; Rome Beauty, 8 votes.

South Atlantic States: Early Harvest, 11; Red Astrachan, 11; Shockley, 10 votes.

Gulf States: Ben Davis, 3; Carter's Blue, 3; Early Harvest, 4; Golden Russet, 3; King 3; Maiden's Blush, 3; Rawle's Janet, 3; Red Astrachan, 3; Rome Beauty, 3; Shockley, 3; Smith's Cider, 3; Yellow Transparent, 3 votes.

Northwest: Duchess of Oldenburg, 3; Fameuse, 3; McMahon's White, 3; Roman Stem, 3; Talman Sweet, 3; Wealthy, 3; Wolf River, 3; Yellow Transparent, 3 votes.

Central Mississippi Valley: Ben Davis, 13; Early Harvest, 12, Jonathan, 12; Rambo, 12; Winesap, 12 votes.

Texas Region: Ben Davis, 3; Early Harvest, 2; Gravenstein, 2; Red June, 2; Rutledge, 2; Shockly, 3; Summer Queen, 2; Transcendant Crab, 3; Winesap, 2; Yellow Horse, 2 votes.

Plains: Duchess of Oldenburg, 6; Early Harvest, 7; Janet, 7; Jonathan, 7; Maiden's Blush, 6; Mann, 6; Missouri Pippin, 6; Red Astrachan, 6; Walbridge, 6; Wealthy, 6; Winesap, 7 votes.

Mountain Region: This region is supplied with stock almost wholly from nurseries in other regions, and no conclusions can be drawn from the above data as to the distribution of varieties in it.

Pacific Region: Alexander, 8; Baldwin, 9; Early Harvest, 8; Red Astrachan, 9; Red June, 9; Rhode Island Greening, 8; White Winter Pearmain, 9; Winesap, 8; Yellow Bellflower, 9 votes.

From all the data at hand, it appears that Red Astrachan is the most cosmopolitan apple in America.

§ 3. *Plant Portraits of 1892.*

A LIST OF ILLUSTRATIONS IN LEADING HORTICULTURAL AND SOME AGRICULTURAL JOURNALS AND IN EXPERIMENT STATION BULLETINS THAT ARE OF SUCH CHARACTER AS TO AID IN THE DETERMINATION OF THE SPECIES OR VARIETIES OF PLANTS.

ABBREVIATIONS.—*Am. Agr.*, American Agriculturist; *Am. Farm & Hort.*, American Farm and Horticulturist; *Am. Flor.*, American Florist; *Am. Gar.*, American Gardening; *Bot. Mag.*, Botanical Magazine; *Brit. Gar.*, British Gardening (*North. Gar.* before April 15, 1892); *Bull. Tosc.*, Bulletino della R. Societa Toscana di Orticultura; *Cal. Frt. Gr.*, California Fruit Grower; *Cal. Orch. & Farm*, California Orchard and Farm; *Cen. Exp'l Farm*, Bulletin Central Experimental Farm, Canada; *Fla. Dis.*, Florida Dispatch, Farmer and Fruit Grower; Garden; *Gar. & For.*, Garden and Forest; *Gar. Chron.*, Gardeners' Chronicle; *Gar. Mag.*, Gardeners' Magazine; *Gar. World.*, Gardening World; *Gart.*, Gartenflora; *Gart.-Tid.*, Gartner-Tidende; *Hort. Belge*, Revue de l'Horticulture Belge et Etrangére; *Ill. Hort.*, L'Illustration Horticole; *Illustr. Garten-Zeit.*, Wiener Illustrirte Garten-Zeitung; *Ind.*, Indiana Agricultural Experiment Station; *Jard.*, Le Jardin; *Jor. Hort. Prat.*, Journal de Horticultura Pratica; *Jour. Hort.*, Journal of Horticulture; *Jour. Orch.*, Journal des Orchides; *Jour. Roses.*, Journal des Roses; *Kan.*, Kansas Agricultural Experiment Station; *La.*, Louisiana Agricultural Experiment Station; *L'Orch.*, L'Orchidophile; *Lyon-Hort.*, Lyon-Horticole; *Maine*, Maine Agricultural Experiment Station; Meehan's Monthly; *N. Y. Cornell*, Cornell Agricultural Experiment Station; *N. Y. State*, New York State Agricultural Experiment Station; *North. Gar.*, Northern Gardener (*Brit. Gar.* after April 15, 1892); *Orch. & Gar.*, Orchard and Garden; Pacific Rural Press; *Pa.*, Pennsylvania Agricultural Experiment Station; *Prakt. Rat.*, Der Praktische Ratgeber im Obst und Gartenbau; *Rev. Hort.*, Revue Horticole; *Rev. Hort. Vit.*, Revue Horticole et Viticole; *Rosen Zeit.*, Rosen Zeitung; *Rural N.-Y.*, Rural New-Yorker; *Semp.*, Sempervirens; *Vick's Mag.*, Vick's Magazine.

C, colored plate.

(2) refers to the second volume, in those periodicals which run into two volumes during the year.

In all cases, the nomenclature is that which accompanies the illustrations. The editor does not vouch for the accuracy of any of the portraits. In a very few instances, incomplete files have been used.

Abelia rupestris, Gart. 113. C.
Abies Veitchii, Gar. Chron. 399. (2.)
Abobra viridiflora, Jard. 139.
Acacia dealbata, Garden 9. (2). C.
Acer carpinifolium, Gart. 175.
— Negundo, Jor. Hort. Prat. 226.
— Nikœnse, Gart. 151.
— palmatum var. Aokii, Gart. 33. C.
— platanoides, Prakt. Rat. 483.
— Pseudoplatanus, Prakt. Rat. 483.
— rubrum var. Drummondii, Gart. 337. C.
Achillea pubescens, Illustr. Garten-Zeit. 128.
Acidanthera bicolor, Jour. Hort. 441. (2).
Acokanthera spectabilis, Gar. Mag. 213.
Aconitum autumnale, Am. Gar. 731.
Acrostichum (Hymenodium) crinitum, Hort. Belge 17.
Adiantum dolabriforme, North. Gar. 233.
— Farleyense, Am. Gar. 144.
— rubellum, North. Gar. 22.
— Sancta Cathariniæ, Gar. World 725.
— sulphureum, Garden 589. (2).
— Victoriæ, Gar. World 725.
Adoxa moschatellina, Lyon-Hort. 118.
Æchmea Barleei, Gart. 360.
Æranthus (Angræcum) Leonis, Jour. Hort. 409.
Æschynanthus pulcher, Hort. Belge 13. C.
Aganisia ionoptera, Bot. Mag. t. 7270. C.
Agapanthus umbellatus albus, Garden 40.
Agapetes buxifolia, Jour. Hort. 335. (2.)
Agave Americana, Am. Flor. 503; Gart. 270.
— Engelmanni, Am. Flor. 109. (2.)
— Salmiana, Bull. Tosc. 264.
— vestita, Am. Gar. 609.
— Victoriæ Reginæ, Prakt. Rat. 465.
Ageratum nain jaune, Jard. 38.
Aglaonema costatum, Jour. Hort. 149. (2).
Ailantus glandulosa, Am. Gar. 95.
Aira provincialis, Rev. Hort. 67.
Allamanda Hendersoni, Gar. Chron. 793. (2).
— Williamsii, Gar. Mag. 49; North. Gar. 54.
Alloplectus Lynchei, Bot. Mag. t. 7271. C.
Almond, David's White Flowering, Am. Gar. 312; 441.
Alocasia intermedia, Hort. Belge 10.
— Sanderiana, Brit. Gar. 129. (2.)
— Sedeni, Hort. Belge 8.
Aloe mitrœformis. Lyon-Hort. 109.
— umbellata Lyon-Hort. 108.
— variegata, Prakt. Rat. 465.
Alpinia Malaccensis, Gar. World 565.
Alpine auricula, Mrs. Harry Turner, Gar. Mag. 280.
Althæa ficifolia, Bot. Mag. t. 7237. C.
Amaryllis formosissima, Semp. 355.
— Veitch's Hybrid Strain, North-Gar.: 118.
Amberboa moschata, Illustr. Garten-Ziet. 457. C.
Ambrosia artemisiæfolia, Am. Gar. 502.
Amelanchier alnifolia. Gar. & For. 415.
— Canadensis, Garden, 540. (2). C.
Ampelopsis Veitchi, Gart.-Tid. 98
Amygdalopsis Lindleyi, Hort. Belge 132. C.
Amygdalus Davidiana, Garden 485.
— — alba, Gar. World 421; Am. Gard. 312, 441.
Anastatica hierochuntica, Gart. 497; Illurtr. Gart.-Zeit. 406.
Anemone coronaria, Am. Gar. 123.
— — flore pleno, Jard. 29.
— fulgens, Am. Agr. 123.
— Japonica, Am. Agr. 123.
— patens, Jour. Hort. 377.
Angræcum fastuosum, Jour. Hort. 311.

Angræcum sesquipedale, Am. Flor. 830; Am. Gar. 217.
Anœctochili Lowi, Gar. Mag. 135.
Anomatheca cruenta. Jour. Hort. 381. (2.)
Anona Cherimolia, Am. Agr. 369.
Anthemis tinctoria, Garden 91. (2.)
Anthurium Andreanum sanguineum, Jour. Hort. 201.
— — var. Wambekeanum, 109. C.
— atrosanguineum, Garden 28. (2.) C.
— hybridum, O. J. Quintus, Gart. 145. C.
— Scherzerianum, Garden 29. (2).
Antigramma Douglasi, Garden 479. (2.)
Aotus villosa, Jour. Hort. 289. (2.)
Apios Fortunei. Am. Gar. 77.
Apple, Alfriston, North. Gar. 75.
— Annie Elizabeth, North. Gar. 75.
— Baumann's Reinette, Prakt. Rat. 33.
— Basil the Great, Rural N.-Y. 683.
— Beauty of Kent, Garden 519; North Gar. 60.
— Bismarck, Prakt. Rat. 19; 379.
— Blenheim Orange, Garden 132.
— Boardman, Rural N.-Y., 35.
— — Am. Gar. 137.
— Braddick's Nonpareil, Garden 357. (2.)
— Canada Baldwin, Can. Hort. 337.
— Candile Sinope, Rev. Hort. 36. C.
— Cellini, Gar. Chron. 21; North. Gar. 44.
— Chelmsford Wonder, Jour. Hort. 221.
— Cockpit, Garden 545. (2.)
— Court Pendu Plat, Brit. Gar. 380.
— Cox's Orange Pippin, Brit. Gar. 380; Garden 247 (2); Gar. Chron. 21.
— Pomona, Gar. Chron. 21; North. Gar. 27.
Apple, D'Arcy Spice, Garden 406.
— Domneschta, Semp. 187.
— Duchess of Oldenburgh, Brit. Gar. 333.
— Dumelowe's Seedling, North. Gar. 124.
— Early Margaret, Brit. Gar. 302.
— Ecklinville, North. Gar. 6.
— Elisa Ratke, Rev. Hort. 158.
— Emperor Alexander, Gar. Chron. 21.
— Eve, Prakt. Rat. 379.
— Fearn's Pippin, Brit. Gar. 396.
— Foxwhelp, Gar. Chron. 533. (2.)
— Franklin's Golden Pippin, Brit. Gar. 363
— Gibb Crab, Can. Hort. 225.
— Gloria Mundi, Brit. Gar. 302.
— Glowing Coal, Orch. & Gar. 67.
— Golden Noble, Gar. Chron. 21; Lyon.-Hort. 308.
— Grand Alexander, Can. Hort. 79; Lyon.-Hort. 91.
— Grand Aport, Can. Hort. 80.
— Grand Duke Constantine, Rural N.-Y. 682.
— Hanwell Sowing, North. Gar. 107.
— Herefordshire Pearmain, North. Gar. 107.
— Hislop, Rev. Hort. 420. C.
— Kandil Sinap, Illustr. Garten-Zeit. 251; Semp. 208.
— Keswick Codlin, North. Gar. 124.
— Kentish Fillbasket, North. Gar. 107.
— King of the Pippins, North. Gar. 91.
— Lady Henniker, North Gar. 44.
— Lady Sudeley, Gar. Chron. 332. (2.)
— Lamb Abbey Pearman, Brit. Gar. 333.
— Lane's Prince Albert, Brit. Gar. 252; Garden 209; Gar. Chron. 333. (2.)
— Loddington or Stone's, Gar. Chron. 335. (2.)
— Lord Clyde, North. Gar. 203.

Apple, Lord Grosvenor, North. Gar. 6.
— Lord Suffield, North. Gar. 6.
— Luiken, Gart.-Tid. 9.
— Maiden's Blush, Can. Hort. 65. C.
— McMahan's White, Rural, N.-Y. 773.
— Mére de Menage, Brit. Gar. 252.
— Montreal Beauty, Rev. Hort. 420. C.
— New Bess Pool, North. Gar. 156.
— Newell's Winter, Rural N.-Y. 773.
— New Northern Greening North. Gar. 60.
— Newtown Pippin, Garden 249.
— New Seedling, Rural N.-Y. 66.
— Old Nonpareil, Brit. Gar. 380.
— Old Pearmain, Brit. Gar. 380.
— Ontario, Gart. 505. C.
— Orange Crab, Can. Hort. 225.
— Peasgood's Nonsuch, Can. Hort. 346; Gar. Chron. 337 (2); North. Gar. 156.
— Pineapple Russet, Brit. Gar. 363.
— Pott's Seedling, North. Gar. 27.
— Princess Louise, Illustr. Garten-Zeit. 250; Semp. 109.
— Professor, Jour. Hort 369 (2.)
— Queen, North. Gar 91
— Red Astrachan, Brit. Gar. 302.
— Ribston Pippin, Brit. Gar. 396; Prakt. Rat. 33.
— Rivers' Codlin, Gar. Mag. 630.
— Ruby Gem, Orch. & Gar. 63.
— Sandringham, North. Gar 75.
— Scarlet Nonpareil, Brit. Gar. 333.
— Schoolmaster, North. Gar. 91.
— Scott's Winter, Can. Hort. 159. C.
— Seek-no-Further, Brit. Gar. 363.
— Sir Harry, Gar. Mag. 698.
— Stirling Castle, North Gar. 44.
— Summer Queening, North. Gar. 203.
— — Spitzenburg, Rural N.-Y. 667.

Apple, Tower Glamis, Garden 123. (2.)
— Ukriana Aport, Can. Hort. 77.
— Warner's King, North. Gar. 27.
— White Aport, Can. Hort. 78.
— — Russet, Rural N.-Y. 683.
— Winter Queening, North. Gar. 156.
— Worcester Pearmain, North. Gar. 124.
— Wormsley Grange Pippin, North. Gar. 203.
— Yellow Transparent, Orch. & Gar. 115.
— York Imperial, Meehan's Monthly 189.
— Yorkshire Beauty, Brit. Gar. 252.

Apricot, Hemskirk, Garden 137. (2.)

Aralia cordata, Am. Gar. 6
— Guilfoylei, Jard. 7.
— Sieboldi, Garden 173; Jour. Hort. 177.
— spinosa, Am. Gar. 95

Araucaria excelsa, Jard. 21.

Areca Baueri, Jor. Hort. Prat. 208.
— lutescens, Am. Gar. 141.

Arnebia echioides, Gar. Mag. 350.

Arum Corsicum, Gart. 25.
— dioscorides spectabilis, Brit. Gar. 81. (2.)
— dracunculus, Am. Agr. 317.
— orientale, Brit. Gar. 81. (2.)
— Palæstinum, Gart. 632.
— sanctum, Brit. Gar. 81 (2); Can. Hort. 119; Gart. 77.
— Syriacum, Brit. Gar 81 (2); Bull. Tosc. 136

Arisæma enneaphylla, Jard. 203
— triphyllum, Am. Gar 672

Aristolochia clypeata, Gar. Chron. 433.
— elegans, Brit. Gar. 5 (2); Gart. 187; Jor. Hort. Prat. 236.
— grandiflora, Gart. 187.
— ridicula, Brit. Gar. 313.
— Sipho, Gar. & For. 509.

Asarum Canadense, Am. Gar. 517.
— Cruz-Andræ, Gar. & For. 257.

Asparagus lucidus, Am. Gar. 78,
— plumosus nanus, Prakt. Rat. 308; Semp. 43.
— retrofractus arboreus, Prakt. Rat. 309.
— Sprengeri, Bull. Tosc. 135; Jard. 215.
Aspidistra lurida, Vick's Mag. 133.
Asplenium ebeneum, Am. Gar. 654.
— flabellifolium, Garden 457. (2.)
— montanum, Meehan's Monthly 97. C.
— ruta-muraria, Am. Gar. 652.
— trichomanes, Am. Gar. 653.
Aster, Alpine, Vick's Mag. 19. (2.)
— amethystinus, Gar. & For. 378.
— China Liliput, Gar. World 68. (2.)
— — Pyramidal Boquet Rose, Gar. World 69. (2.)
— cordifolius, Gar. World 325.
— diplostephioides. Gar. Mag. 445; Jour. Hort. 313. (2.)
— elegans, Garden 294. (2.)
— Reine Marguerite Candelabre, Jour. Roses 64.
— sericeus, Gar. & For. 473.
— surculosus, Gar. & For. 521.
— Thomsoni, Garden 295. (2.)
— trinervius, Rev. Hort. 396. C.
— White Comet, Am. Gar. 124.
Asteriscus pygmanus, Illustr. Garten-Zeit. 406.
Astilbe rivularis, Garden 183.
Athyrium Filix-fœmina, Garden 87. (2.)
Aubrietia grandflora, Hort. Belge 204. C.
— purpurea, Garden 10. (2.)
Autumn Monkshood, Am Gar. 731.
Azalea Germaine Pynaert, Hort. Belge 180. C.
— Hexe, Garden 118. (2.) C.
— Indica imbricata, Gar. Chron. 739. (2.)
— Mrs. Anthony Waterer, Gar. Mag. 520.
— mollis, Garden 363 (2); Gar. Chron. 91. (2.)
— nudiflora, Meehan's Monthly 17. C.
Azalea, obtusas, Gar. Chron. 741. (2).
— Vaseyi, Illutr. Garten-Zeit. 203.
Azorella sp., Gart. 453.
Batemannia Burtii, Gar. World 17. (2.)
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§ 4. *Directory of the National, State, Provincial and Other Most Important Horticultural Societies in North America, 1892.*

Alabama Horticultural Society:
Pres., Geo. I. Motz, Huntsville.
Sec., Frank Boykin, Seale.

American Association of Nurserymen:
Pres., H. Augustine, Normal, Ill.
Sec., Chas. A. Green, Rochester, N. Y.

American Carnation Society:
Pres., Edwin Lonsdale, Chestnut Hill, Phila.
Sec., C. J. Pennock, Kennet Square, Chester Co., Pa.

American Chrysanthemum Society:
Pres., W. K. Harris, Philadelphia.
Sec., Edward Lonsdale, Chestnut Hill, Philadelphia.

American Cranberry Growers' Association:
Pres., J. H. Brakeley, Bordentown, N. J.
Sec. and Treas., A. J. Rider, Trenton, N. J.

American Forestry Association:
Pres., James A. Beaver, Bellefonte, Pa.
Sec., C. C. Birmey, Philadelphia, Pa.

American Horticultural Society:
Pres., Parker Earle, Ocean Springs, Miss.
Sec., E. A. Popenoe, Manhattan, Kan.

American Pomological Society:
Pres., P. J. Berckmans, Augusta, Ga.
Sec., G. C. Brackett, Lawrence, Kan.

American Seed Trade Association:
Pres., J. C. Vaughan, Chicago.
Sec. and Treas., A. L. Don, New York.

American: See also Association of American Cemetery Superintendents; Society American Florists.

Arizona Fruit Growers' Association:
Pres., Dr. A. J. Chandler.
Sec., H. R. Patrick, Phœnix.

Arkansas Horticultural Society:
Pres., D. L. McLeod, Judsonia.
Sec., W. K. Tipton, Little Rock.

Association of American Cemetery Superintendents:
Pres., Wm. Salway, Cincinnati.
Sec., Frank Eurich, Toledo, Ohio.

British Columbia Fruit Growers' Association:
Pres., W. J. Harris, Port Hammond.
Sec., A. H. B. MacGowan, Vancouver.

CALIFORNIA—

California Board of State Viticultural Commissioners:
Pres., George West, Stockton.
Sec., Winfield Scott, San Francisco.

California Fruit Union:
Pres., J. Z. Anderson, San Francisco.
Vice Pres. and Sec., L. W. Buck, San Francisco.

California Olive Growers' Association:
Pres., Ellwood Cooper, Santa Barbara.
Sec., B. M. Lelong, San Francisco.

California State Board of Horticulture:
Pres., Ellwood Cooper, Santa Barbara.
Sec., B. M. Lelong, San Francisco.

California State Floral Society:
Pres., E. J. Wickson, Berkeley.
Sec., A. S. Aiken, Berkeley.

California State Horticultural Society:
B. M. Lelong, San Francisco.
Sec., E. J. Wickson, Berkeley.

California State Raisin Growers' Association:
Pres., ——
Sec., W. Harvey, Fresno.

Fruit Association:
Pres., James A. Webster, Vacaville.
Sec., T. H. Buckingham, Vacaville.

Pomological Society of Southern California:
Pres., L. M. Holt, Riverside.
Sec., D. Edson Smith, Santa Ana.

Cider Makers' Association of the Northwest:
Pres., G. W. Hilliard, Brighton, Ill.
Sec., L. R. Bryant, Princeton, Ill.

Colorado Horticultural Society:
Pres., C. S. Faurot, Boulder.
Sec., Alexander Shaw, Denver.

Connecticut. No State Society.

Delaware. No State Society. See Peninsula Hort. Soc.

Eastern Nurserymen's Association:
Pres., W. C. Barry, Rochester, N. Y.
Sec., William Pitkin, Rochester, N. Y.

FLORIDA—

Florida Fruit Exchange:
Pres., G. R. Fairbanks, Jacksonville.
Sec., M. P. Turner, Jacksonville.

Florida Horticultural Society:
Pres., Dudley W. Adams, Tangierine.
Sec., E. O. Painter, De Land.

Florida Orange Growers' Union:
Pres., J. C. McKibbin, Pomona,
Sec., A. H. Manville, Palatka.

Foreign Fruit Exchange:
Pres., ———.
Sec., F. S. Robinson, New York City.

Georgia Horticultural Society:
Pres., P. J. Berckmans, Augusta.
Sec., T. L. Kinsey, Savannah.

ILLINOIS—

Illinois Horticultural Society:
Pres., H. Augustine, Normal.
Sec., A. C. Hammond, Warsaw.

Horticultural Society of Southern Illinois:
Pres., Daniel Perry, Carmi.
Sec., E. G. Mendenhall, Kinmundy.

INDIANA—

Indiana Horticultural Society:
Pres., E. J. Howland, Howland.
Sec., W. H. Ragan, Greencastle.

Society of Indiana Florists:
Pres., Frederick Dornor, Lafayette.
Sec., Wm. G. Bertermann, Indianapolis.

Inter-State Shippers' Association:
Pres., A. M. DuBois, Cobden, Ill.
Sec., Thomas Buckle, Villa Ridge, Ill.

IOWA—

Iowa State Horticultural Society:
Pres., Eugene Secor, Forest City.
Sec., Geo. Van Houten, Lenox.

Northeastern Iowa Horticultural Society:
Pres., D. A. Porterfield, Traer.
Sec., C. W. Burton, Cedar Rapids.

Northwestern Iowa Horticultural Society:
Pres., M. E. Hinkley, Marcus.
Sec., M. B. Chapman, Correctionville.

Kansas Horticultural Society:

Pres., L. Houk, Hutchinson.
Sec., G. C. Brackett, Lawrence.

Kentucky Horticultural Society:

Pres., A. P. Farnsley, Louisville.
Sec., John C. Hawes, Louisville.

Louisiana. No State Society.

Maine State Pomological Society.

Pres., Chas. S. Pope, Manchester.
Sec., D. H. Knowlton, Farmington.

Maryland. No Society. See Peninsula Hort. Soc.

MASSACHUSETTS—

Cape Cod Cranberry Growers' Association:

Pres., J. J. Russel, Plymouth.
Sec. and Treas., Franklin Crocker, Hyannis.

Massachusetts Horticultural Society:

Pres., Nathaniel T. Kidder, Milton.
Sec., Robert Manning, Horticultural Hall, Boston.

MICHIGAN—

State Horticultural Society:

Pres., T. T. Lyon, South Haven.
Sec., Edwy C. Reid, Allegan.

West Michigan Horticultural Society:

Pres., Mr. Wiley, Saugatuck.
Sec., Mr. Whitney, Muskegon.

MINNESOTA—

Minnesota Horticultural Society:

Pres., Wyman Elliot, Minneapolis.
Sec., A. W. Latham, Excelsior.

Society of Minnesota Florists:

Pres., E. Nagel, Minneapolis.
Sec., R. Wessling, Minneapolis.

Mississippi Horticultural Society:

Pres., H. E. McKay, Madison Station.
Sec., W. H. Cassell, Canton.

Missouri Horticultural Society:

Pres., J. C. Evans, Harlem.
Sec., L. A. Goodman, Westport.

Montana. No Society.

Montreal Horticultural Society:

Pres., John Doyle, Montreal.
Cor. Sec., Thomas Williamson, Montreal.

Nebraska Horticultural Society:

Pres., F. W. Taylor, Lincoln.
Sec., G. J. Carpenter, Fairbury.

Nevada. No Society

New Hampshire. No Society.

New Jersey Horticultural Society:
Pres., Ira J. Blackwell, Titusville.
Sec., Wm. R. Ward, Newark.

New Mexico Horticultural Society:
Pres., Authur Boyle, Santa Fé.
Sec., Geo. H. Cross, Santa Fé.

NEW YORK—

New York Horticultural Society. Non-active.

Western New York Horticultural Society:
Pres., W. C. Barry, Rochester.
Sec., John Hall, Rochester.

North Carolina Horticultural Society:
Pres., J. Van Lindley, Pomona.
Sec., S. Otho Wilson, Raleigh.

North Dakota. No Society.

Nova Scotia Fruit Growers' Association:
Pres., J. W. Bigelow, Wolfville.
Sec., S. C. Parker, Benvick.

Ohio Horticultural Society:
Pres., Geo. W. Campbell, Delaware.
Sec., W. W. Farnsworth, Waterville.

Ontario Fruit Growers' Association:
Pres., A. H. Pettit, Grimsby.
Sec., L. Woolverton, Grimsby.

OREGON—

Oregon Horticultural Society:
Pres., J. R. Cardwell, Portland.
Sec., E. R. Lake, Portland.

Oregon Pomological Society:
Pres., E. P. Roberts, The Dalles.
Sec., J. A. Varney, The Dalles.

Oregon State Board of Horticulture:
Pres., J. R. Cardwell, Portland.
Soc., Ethan W. Allen, Portland.

Peninsular Horticultural Society:
Pres., George Biddle, Cecilton, Md.
Sec., Wesley Webb, Dover, Del.

PENNSYLVANIA—

Pennsylvania Horticultural Society:
Pres., George W. Childs, Philadelphia.
Sec., D. D. L. Farson, Philadelphia.

Pennsylvania State Horticultural Association:
Pres., W. H. Moon, Morrisville.
Sec., E. B. Engle, Waynesboro.

Rhode Island Horticultural Society:
Pres., John G. Massie, Providence.
Sec., Chas. W. Smith, Providence.

Society of American Florists:
Pres., Wm. R. Smith, Washington, D. C.
Sec., W. J. Stewart, Boston, Mass.

South Carolina Horticultural Society:
Pres., H. B. Buist, Greenville.
Sec., G. Wanner, Walhalla.

South Dakota Horticultural Society:
Pres., H. C. Warner, Forestburg.
Sec , E. D. Cowles, Vermilion.

Tennessee—West Tennessee Horticultural Society:
Pres., J. C. Tharp, Gibson.
Sec., A. A. Cawdery, Gadsden.

TEXAS—

Texas State Horticultural Society:
Pres., J. C. Newberry. Pilot Point.
Sec., E. L. Huffman, Waxahachie.

Texas State Nurserymen's Association:
Pres., E. W. Kirkpatrick, McKinney.
Sec., J. M. Howell, Dallas.

Utah. No Society.

Vermont. No Society.

Virginia Pomological Society. Non-active. See Peninsula Hort. Soc.

WASHINGTON—

State Board of Horticulture:
Pres., Henry Bucey, Tacoma.
Sec., C. A. Tonneson, Tacoma.

Washington Horticultural Sooiety:
Pres., Henry Bucey, Tacoma.
Sec., A. N. Miller, Puyallup.

West Virginia. No Society.

Western Nurserymen's Association.
Pres., G. J. Carpenter. Fairbury, Neb.
Sec., J. W. Schoette, St. Louis, Mo.

WISCONSIN—

Wisconsin Horticultural Society.
Pres., M. A. Thayer, Sparta.
Sec., B. S. Hoxie, Evansville.

Wisconsin State Cranberry Growers' Association:
Pres., W. S. Braddock, Mather.
Sec. and Treas., J. H. Treat, Meadow Valley.

Wyoming. No Society.

§ 5. *Directory of Horticulturists, or Those in Charge of Horticultural Work, of Experiment Stations in North America, 1892.*

Alabama:
  P. H. Mell, M. E., Ph. D., Auburn, Botanist and Meteorologist.
Arizona:
  E. L. Benton, Tucson, Horticulturist.
Arkansas:
  J. F. McKay, Fayetteville, Horticulturist.
California:
  E. J. Wickson, A. M., Berkeley, Supt. of Grounds.
Canada (Agricultural College):
  J. Hoyes Panton, Guelph, Botanist.
Canada (Central Experimental Farm):
  John Craig, Ottawa, Horticulturist.
Colorado:
  C. S. Crandall, M. S., Fort Collins, Botanist and Horticulturist.
Connecticut (State Station):
  W. C. Sturgis, Ph. D., New Haven, Mycologist.
Delaware:
  M. H. Beckwith, Newark, Horticulturist and Entomologist.
Florida:
  J. K. Fitzgerald, B. S., Lake City, Horticulturist.
Georgia:
  Gustave Speth, Experiment, Horticulturist.
Idaho:
  Robert Milliken, Moscow, Director.
Illinois:
  Thomas J. Burrill, Ph. D., Champaign, Horticulturist and Botanist.
Indiana:
  James Troop, M. S., Lafayette, Horticulturist.

Iowa:
J. L. Budd, M. H., Ames, Horticulturist.

Kansas:
Edward A. Popenoe, A.M., Manhattan, Horticulturist.

Kentucky:
C. W. Mathews, B. S., Lexington, Horticulturist.

Louisiana:
H. A. Morgan, B. S., Baton Rouge, Entomologist and Horticulturist.

Maine:
W. M. Munson, M. S., Orono, Horticulturist.

Maryland:
James S. Robinson, College Park, Horticulturist.

Massachusetts (Hatch Station):
Samuel T. Maynard, B. S., Amherst, Horticulturist.

Michigan:
L. R. Taft, M. S., Agricultural College P. O., Horticulturist.

Minnesota:
Samuel B. Green, B. S., St. Anthony Park, Horticulturist.

Mississippi:
A. B. McKay, B. S., Agricultural College P. O., Horticulturist.

Missouri:
Charles Keffer, Columbia, Horticulturist.

Nebraska:
Frederic W. Taylor, Lincoln, Horticulturist.

Nevada:
R. H. McDowell, B. S., Reno, Agriculturist and Horticulturist.

New Hampshire:
G. H. Whitcher, B. S., Hanover, Director.

New Jersey:
Byron D. Halsted, Sc. D., New Brunswick, Botanist and Horticulturist.

New Mexico:
A. E. Blount, A. M., Las Cruces, Agriculturist and Horticulturist.

New York (Cornell):
L. H. Bailey, M. S., Ithaca, Horticulturist.

New York (State):
S. A. Beach, B. S., Botanist and Horticulturist.
C. E. Hunn, Geneva, Assistant.
George W. Churchill, Geneva, Assistant.

North Carolina:
W. F. Massey, C. E., Raleigh, Horticulturist.

North Dakota:
C. B. Waldron, B. S., Fargo, Arboriculturist.

Ohio:
W. J. Green, Wooster, Horticulturist. Removed from Columbus in the fall of 1892.

Oklahoma:
A. C. Magruder, Stillwater, Agriculturist and Horticulturist.

Oregon:
George Coote, Corvallis, Horticulturist.

Pennsylvania:
George C. Butz, M. S., State College, Centre Co., Horticulturist.

Rhode Island:
L. F. Kinney, B. S., Kingston, Horticulturist.

South Carolina:
J. S. Newman, Fort Hill, Director.

South Dakota:
L. Foster, M. S., Brookings, Director.

Tennessee:
R. L. Watts, B. Ag., Knoxville, Horticulturist.

Texas:
G. W. Curtis, M. S., College Station, Director.

Utah:
E. S. Richman, B. S., Logan, Horticulturist and Entomologist.

Vermont:
B. W. Minot, B. S. Burlington, Horticulturist.

Virginia:
W. B. Alwood, Blacksburg, Botanist and Entomologist.

Washington:
E. R. Lake, M. S., Pullman, Botanist and Horticulturist.

West Virginia:
F. W. Rane, M. S., Morgantown, Horticulturist.

Wisconsin:
Emmet S. Goff, Madison, Horticulturist.

Wyoming:
B. C. Buffum, B. S., Laramie, Horticulturist.

§ 6. *The Botanic Gardens of the World, 1892.*

Algeria—1.

Algiers, Jardin d'Acclimation du Hamma, Charles Rivière, Director.

Australia —4.

Adelaide (South Australia), Maurice Holtze, Director.
Brisbane (Queensland), Philip MacMahon, Director.
Melbourne (Victoria), Dr. W. K. Guilfoyle, Director.
Sidney (New South Wales), Charles Moore, F. L. S., Director.

Austro-Hungary—15.

Brunn, Botanic Gardens, Prof. Alex. Makovsky, Director.
Budapest (Hungary), University Botanic Garden, Dr. L. Juranyi, Dir.
Czernowitz (Bukovina), University Botanic Garden, Dr. Ed. Tangl, Dir.
Gratz (Styria), University Botanic Garden, Dr. G. Haberlandt, Dir.
Innsbruck (Tyrol), University Botanic Garden, Dr. Emil Heinricher, Director.
Klagenfurt (Carinthia), Baron Marcus V. Jabornegg Gamsenegg, Dir.
Kolozsvar (Transylvania), Royal Botanic Garden, Dr. Aug. Kanitz, Dir.
Krakau (Galicia), University Botanic Garden, Dr. Jos. Thom. De. Rostafinski, Director.
Lemberg (Galicia), University Botanic Garden, Dr. Th. Giesieski, Dir.
Prague (Bohemia), University Botanic Garden, Dr. M. Willkomm, Dir.
Schemnitz (Hungary), Prof. Ludwig Fekete, Director.
" " Forestry Acad. Botanic Garden, R. Ling, Dir.
Trieste (Istria), Raimondo Tominz, Director.
Vienna, University Botanic Garden, Dr. A. J. Kerner, Director
Vienna, Imperial Horticultural Gardens of Hofburg, Fr. Antoine, Dir.

Belgium—5.

Antwerp, Dr. H. Van Heurck, Director.
Brussels, Royal Botanic Gardens, Francois Crépin, Director.
Ghent, University Botanic Garden, Dr. J. MacLeod, Director.
Gembloux, Botanic Garden of the Agricultural Institute, Em. Laurent, Director.
Liege, University Botanic Garden, Dr. A. Gravais, Director.

Brazil—1.

Rio de Janeiro, Government Botanic Gardens, Dr. J. B. Rodrigues, Director.

Canada—1.

Montreal (P. Q.), McGill University Botanic Garden, Prof. D. P. Penhallow, Director.

Canary Islands—1.

Orotava (Teneriffe), Jardin d'Acclimatation, Mr. Wildpret, Chief Gardener.

Cape of Good Hope—3.

Cape Town, Prof. MacOwan, Director.
Graaf Reinet, J. C. Smith, Chief of the Garden.
Graham's Town, Edward Tidmarsh, Chief of the Garden.

Ceylon—1.

Peradeniya, Royal Botanic Garden, Dr. Henry Trimen, Director.

Chili—1.

Santiago, Prof. Fred. Philippi (fils), Director.

China—1.

Hong Kong, Government Botanic Gardens, A. B. Westline, Supt.

Cochin China—1.

Saigon, Colonial Botanic Gardens, Dr. Regnier, Director.

Denmark—2.

Copenhagen, University Botanic Gardens, Prof. Eug. Warming, Dir.
Copenhagen, Royal Gardens of Rosenborg, Mr. Paludin, Director.

Ecuador—1.

Quito, Prof. R. P. Al Sodiro, Director.

Egypt—1.

Cairo, Prof. E. Sickenberger, Director.

France—22.

Angers, Dr. Em. Lieutaud, Director.
Besancon, Dr. Ant. Magnin, Director.
Caen, Otto Lignier, Director.
Cannes, Comte d'Emprémesnil, Director.
Clermont-Ferrand, M. Langè, Chef des Culture.
Dijon, Dr. Laguesse, Director.
Hyeres, Emile Davrillon, Director.
Lille, T. Meurein, Director.
Lyon, Civic Botanic Garden, Prof. Gerard, Director.
" Botanic Garden of the Faculty of Medicine, Dr. C. Beauvisage, Director.
" Botanic Garden of the Veterinary School, Prof. Faure, Director.
Montpellier, Prof. M. Granel, Director.
Nancy, Prof. G. Le Monnier, Director.
Nantes, Dr. Ecorchard, Director.
Orleans, M. Rossignol, Director.
Paris, Gardens of the Natural History Museum, Prof. Maxime Cornu, Director.
Rochefort, Dr. Barallier, Director.
Rouen, Emm. Blanche, Director.
St. Quentin, Charles Magnier, Director.
Toulon, J. B. Chaubaud, Chief Gardener.
Toulouse, Prof. Leclere du Sablon, Director.
Tours, Prof. David Barnsby, Director.

Germany—35.

Aix-la-Chapelle, Botanic Gardens, Dr. A. Förster, Director.
Bamberg (Bavaria), Dr. Funk, Director.
Berlin, Royal Botanic Gardens, Prof. A. Engler, Director.
Berlin, University Botanic Gardens, Dr. S. Schwendener, Director.
Bonn (Rhenish Prussia), University Botanic Gardens, Dr. Ed. Strasburger, Director.

Breslau (Silesia), University Botanic Gardens, Dr. K. Prantl, Director.
Brunswick (Brunswick), Botanic Garden of the Polytechnic School, Dr. W. Blasius, Director.
Carlsruhe (Baden), J. Pfister, Director.
Cologne (Rhenish Prussia), Prof. J. Niepraschk, Director.
Darmstadt (Hesse), Botanic Garden of the Polytechnic School, Dr. Leopold Dippel, Director.
Dresden (Saxony), Royal Botanic Garden, Dr. Oscar Drade, Director.
Enlangen (Bavaria), University Botanic Garden, Dr. Max. Rees, Dir.
Frankfort-on-Main (Hesse-Nassau), Botanic Garden of the Medical Institute, ——, Director.
Freiburg (Baden), University Botanic Garden, Dr. F. Hildebrand, Director.
Giessen (Hesse), University Botanic Garden, Prof. A. Hansen, Dir.
Gorlitz (Silesia), Dr. R. Peck, Director.
Gottingen, University Botanic Garden, Dr. Peter, Director.
Greifswald (Pomerania), University Botanic Garden, Dr. Fr. Schmitz, Director.
Halle-upon-Salle (Saxony), University Botanic Garden, Dr. Greg. Kraus, Director.
Hamburg, Dr. Sadebeck, Director.
Heidelberg (Baden), University Botanic Garden, Dr. E. Pfitzer, Dir.
Jena (Saxe-Weimar), University Botanic Garden, Dr. E. Stahl, Dir.
Kiel (Schleswig-Holstein), University Botanic Garden, Prof. J. Reinke, Director.
Konigsberg, University Botanic Garden, Dr. Christ. Luerrsen, Director.
Leipzig (Saxony), University Botanic Garden, Dr. W. Pfeffer, Director.
Marbourg (Hesse-Nassau), University Botanic Gardens, ——— Dir.
Munden (Hanover), Forestry Botanic Garden, N. F. C. Müller, Dir.
Munich (Bavaria), Dr. K. Goebel, Director.
Munster (Westphalia), Botanic Garden of the Academy, Dr. O. Brefeld, Director.
Potsdam, Dr. Juhlke, Director.
Rostock (Mecklenburg), University Botanic Garden, Dr. P. Falkenberg, Director.
Strasburg (Alsace-Lorraine), University Botanic Garden, Comte Herm. de Solms-Lauback, Director.
Tharand (Saxony), Forestry Academy Garden, Dr. Fred. Nobbe, Dir.
Tubingen (Wurtemberg), University Botanic Garden, ——Director.
Wurzberg (Bavaria), University Botanic Garden, Dr. Jul. von Sachs, Director.

Great Britain and Ireland—11.

Birmingham (England), Mr. Latham, Director.
Cambridge (England), University Botanic Garden, Dr. Francis Darwin, Sec. to the Garden ynd.
London (England), Royal Gardens, Kew, Prof. W. T. Thistelton-Dyer, Director.
London (England), Royal Botanic Gardens, Regent's Park, W. Coomber, uperintendent.
London (England), Royal Horticultural Society Gardens, South Kensington, A. F. Barron, Superintendent.
Manchester (England), Bruce Findlay, Curator.
Oxford (England), University Botanic Garden, Dr S. H. Vines, Dir.
Dublin (Ireland), Royal Botanic Gardens of Glasnevin, F. W. Moore, Curator.
Belfast (Ireland), Royal Belfast Botanic Gardens, R. Motherell, Sec'y.
Edinburgh (Scotland), Royal Botanic Gardens, Dr. I. Bayley Balfour, Dir.
Glasgow (Scotland), R. Bullen, Curator.

Greece—1.

Athens, Dr. T. de Heldreich, Director.

Guatemala—1.

Guatemala, Dr. Francisco Abella, Director.

Guiana—1.

Georgetown, G. S. Jenman, Superintendent.

Holland—4.

Amsterdam, Prof. Dr. C. A. J. A. Oudemans, Director.
Groningen, Prof. Dr. J. W. Moll, Director.
Leyden, Prof. Dr. W. F. R. Suringar, Director.
Utrecht, Prof. Dr. N. W. P. Rauwenhoff, Director.

Indian Empire—9.

Argras (N. W. Provinces), Taj Gardens, A. B. Westland, Supt.
Bangalore (Madras), Col. W. L. Johnson, Director.
Bombay, S. Carstenson, Supt.
Calcutta, Royal Botanic Gardens, Prof. G. King, Director.
Ganish Kind (Poona), ———, Director.
Mysore, Government Botanc Gardens, ———, Director.
Ootacamud, Mr. M. A. Lanen, Director.
Pondichery.
Saharanpur and Mussourie (Bengal), Government Botanic Gardens, W. Gollen, Supt. J. F. Duthie, Dir. Bot. Dept. of Northern India.

Italy—22.

Boulogne, F. Delpino, Director.
Cagliari, Dr. P. Gennari, Director.
Caserta, Dr. N. Terracciano, Director.
Catania, Prof. P. Baccarini, Director.
Ferrara, Dr. Carus Massalongo, Director.
Florence, Prof. T. Caruel, Director.
Genoa, Prof. O. Penzig, Director.
Messina, Prof. G. Morini, Director.
Milan, Prof. Fr. Ardissone, Director.
Modina, Dr. A. Mori, Director.
Naples, Dr. J. A. Pasquale, Director.
Padova, Cav. Dr. P. A. Saccardo, Director.
Palermo, Prof. A. Bozzi, Director.
Parma, Prof. J. Passerini, Director.
Pavia, Prof. J. Briosi, Director.
Perouse, Prof. A. Battelli, Director.
Pisa, Dr. J. Arcangeli, Director.
Portici, Dr. Horace Comes, Director
Rome, Dr. R. Picrotta, Director.
Siena, Prof. Att. Tassi, Director.
Turin, Prof. G. Gibelli, Director.
Venice, Sen. Ruchiner, Director.

Japan—2.

Tokio, Botanic Garden of the Imperial University, Z. Matsumoura, Director.
Sapporo, Government Botanic Gardens, Dr. K. Miyabe, Director.

Java—1.

Buitenzorg, Dr. M. Treub, Director.

Malta—1.
Floriana, Argotti Gardens, Prof. F. Debono. M. D,. Director

Mauritius—1.
Port Louis, J. Horne, Director.

Natal—1.
D'Urban, Natal Botanic Gardens, J. Medley Wood, Curator.

New Zealand—3.
Christchurch, A. L. Taylor, Director.
Dunedin, J. McBean, Director.
Wellington, Colonial Botanic Garden, Sir James Hector, K. C. M. G., Dir.

Peru—1.
Lima, Dr. Mig. de los Rios, Director.

Philippine Islands—1.
Manilla (Luzon), ——, Director.

Portugal—3.
Coimbra, Dr. J. A. Hienriques, Director.
Lisbon, Prof. Conde de Ficalho, Director.
Oporto, Dr. A. Goncalves, Director.

Reunion, Island of—1.
St. Denis, M. Richard, Director.

Roumania—2.
Bucharest, Dr. Brandza, Director.
Yassy, Dr. A. Fêtu, Director.

Russia—14.
Dorpat (Livonia), Dr. Ed. Russow, Director.
Helsingfors (Finland), ———, Director.
Kazan (Kazan), Dr. N. W. Sorokin, Director.
Kharkoff, Prof. H. L. Reinhardt, Director.
Kiev, Dr. J. Schmalhausen, Director.
Moscow, Dr. J. Goroschankin. Director.
Nikita (Crimea), Mr. Basarow, Director.
Odessa, Dr. Rioschawi, Director.
Ouman (Kiev) Prof. Puchkawicz, Director.
St. Petersburg, Imperial Botanic Gardens, Dr. Ed. de Regal, Director.
St. Petersburg, University Botanic Gardens, Prof. Andrè Beketow, Dir.
St. Petersburg. Gardens of the Medical Academy, Prof. A. Batazin, Dir.
Tiflis, H. Jacob Medwedew, Director.
Warsaw, H. W. Belajew, Director.

Scandinavia—6.
Christiania (Norway), University Botanic Gardens, Dr. F. C. Schübeler, Director.
Goteborg (Sweden), Hort. Soc. Bot. Gardens, G. Löwegren, Director.
Lund (Sweden), University Botanic Gardens, Dr. F. W. C. Areschoug, Director.
Stockholm (Sweden), Garden of the Royal Academy of Agricultural Sciences, E. Lindgren, Director.
Stockholm (Sweden). Royal Gardens of Haga, M. A. Werner, Director.
Upsala (Sweden), University Botanic Garden, Dr. Th. M. Fries, Dir.

Servia—1.
Belgrade, Prof. St. Th. Yakchitch, Director.

Siberia—1.

Tomsk, University Botanic Gardens, Prof. Korshinsky, Director.

Spain—2.

Madrid, Dr. Miguel Colmeiro, Director.
Valencia, ———, Director.

Straits Settlements—1.

Singapore, H. N. Ridley, Director.

Switzerland—4.

Basle, Dr. Klebs, Director.
Berne, D. L. Fischer, Director.
Geneva, Dr. Mueller, Director.
Zurich, Dr. C. Craner, Director.

Tasmania—1.

Hobart Town, Mr. Abbot, Director.

United States—6.

Brookline (Mass.), Arnold Arboretum of Harvard College, Prof. C. S. Sargent, Director.
Cambridge (Mass.), Harvard College Botanic Gardens, Dr. G. L. Goodale. Director.
Lansing (Michigan), Botanic Gardens of State Agricultural College, Dr. W. J. Beal, Director.
St. Louis (Missouri), Missouri Botanical Garden, Dr. Wm. Trelease, Director.
Washington (D. C.), U. S. Dept. of Agriculture Gardens, Wm. Saunders, Superintendent.
Washington (D. C.), National Botanic Garden, William R. Smith, Dir.

West Indies—6.

Havana (Cuba), J. Lachaume, Director.
Hope Gardens (Jamaica), Wm. Harris, Superintendent.
King's House (Jamaica), Wm. Thompson, Superintendent.
Kingston (Jamaica), Government Botanic Gardens, Wm. Fawcett, Dir.
Trinidad, Royal Botanic Gardens, J. H. Hart.
St. Pierre (Martinique), Colonial Botanic Gardens, E. Nolly, Dir.

Total Botanic Gardens, 203.

§ 7. *Title Index to Experiment Station Horticultural Literature in North America for the year 1892 (including Publications of the Department of Agriculture).*

EXPLANATION.—The figures in the margin are the numbers of the reports and bulletins. The numbers stand alone if the bulletin contains only horticultural matter, but they are enclosed in parentheses if the bulletin contains other matter than that which is indexed. A subject index of these publications is given in § 8.

ALABAMA:

Agricultural Experiment Station.

(4th report.) Report of the Agriculturist.

ARKANSAS:

17. Grapes, Strawberries, Raspberries and Plums. Oct. 1891. *J. F. McKay.*

CALIFORNIA:

96. Sulphuring in Fruit Drying. *E. W. Hilgard.* Fig Trees at the Experiment Stations. *Charles H. Shinn.* Notes on Persian Palms. *Charles H. Shinn.* Jan.

CANADA:

A. Agricultural College (Guelph).

(17th report.) Report of the President. Horticultural Department. *James Mills.*

Report of the Foreman of the Horticultural Department. *James Forsyth.*

Experiments with Peas, Potatoes, Swede Turnips and Carrots *Thomas Shaw* and *C. A. Zavitz.* Report of Experiments in Horticulture.

(LXXII.) Potatoes. Feb. *Thomas Shaw* and *C. A. Zavitz.*

LXXIII. Fungicides and Insecticides. April. *J. H. Panton.*

LXXXI. Bees in Relation to Fruit. *J. H. Panton.*

B. Central Experimental Farm (Ottawa).

17. **Cherries. Nov.** *John Craig.*

COLORADO:

(4th report.) Report of the Botanist and Horticulturist. Jan. *Charles S. Crandall.*

(Special Bulletin A) Section of Botany and Horticulture. Jan.

19. Injurious Insects. The Fruit Tree Leaf-Roller. The Box-Elder Leaf-Roller. The Grape Vine Leaf-Hopper. The Gooseberry Fruit-Fly. The Imported Currant-Borer. The Western Currant and Gooseberry Span-Worm. The Spotted Bean Beetle. The Squash Root-Maggot. The Pea Weevil.

CONNECTICUT:

State Station. (New Haven.)

III. Common Fungous Diseases and Their Treatment. Diseases of the Apple, Pear, Quince, Peach, Plum, and Cherry, Grape, Raspberry, Blackberry, Strawberry, Onion, Potato and Tomato. The Preparation of Fungicides. Cost of Materials. Spraying Apparatus. March. *William C. Sturgis.*

DELAWARE:

XV. Present Status of Knowledge on the Treatment of Diseases of the Vine. Present Status of Knowledge on the Treatment of Pear Leaf-Blight, etc. On the Treatment of Peach Rot. Diseases of the Irish Potato, and their Treatment. On the Preparation of the Fungicides mentioned in this Bulletin. Jan. *Frederick D. Chester.*

XVIII. Strawberries. Test of Varieties. The Strawberry Weevil. Sept. *M. H. Beckwith.*

XIX. Can Peach Rot be Controlled by Spraying? Dec. *Frederick D. Chester.*

FLORIDA:

(17.) Analyses of the Orange. *J. M. Pickel* and *J. J. Earle.*

GEORGIA:

(17.) Irish Potatoes, Sweet Potatoes, Tomatoes. March. *G. Speth.*

ILLINOIS:

21. Horticulture, a General Report. [Variety Tests, Winter Protection of Peach Trees, Protection of the trunks of Trees. Cross Fertilizing and Hybridizing, Improvement of Native Fruits, Methods of Cultivation, Fungicides, Whole and Piece Root Grafting, Botanical Work Affecting Horticulture]. *T. J. Burrill* and *G. W. McCleur.* Corn Crossing, Methods of Crossing, Sweet Corn, Thickness of Planting, 1891. *G. W. McCleur.*

INDIANA:

38, Vol. III. Small Fruits, Treatment of Powdery Mildew and Black Rot, Vegetables. March. *James Troop.*

42, Vol. III. The Potato. The Relation of number of Eyes on the Seed Tuber to the Product. Nov. *J. C. Arthur.*

IOWA:

(16.) Crop Report for the Farm Department. *D. A. Kent.* Varieties of Potatoes, Experiments with Fungicides, *L. H. Pammel.* What to Plant on the Home Grounds. *J. L. Budd.* Feb.

(17.) Treatment of some Fungous Diseases. *L. H. Pammel.* Effects of Spraying on Plants and Fruit, and Notes on Insects. *Herbert Osborn.* May.

(18.) Reports on Injurious Insects. *Herbert Osborn* and *H. A. Gossard.* The Apple Trees, and Apple Crop on the College Farm. *J. L. Budd.* Aug.

(19.) Experiments with New Orchard Fruits, Trees and Plants. *J. L. Budd.* On the Crossing of Cucurbits. *L. H. Pammel.* Nov.

KANSAS:

27. Crossed Varieties of Corn, Third Year. Dec. 1891. *W. A. Kellerman* and *C. H. Thompson.*

28. Second Report on the Experimental Vineyard. Dec. 1891. *E. A. Popenoe* and *S. C. Mason.*

37. Experiments in Potato Culture. Dec. *E. A. Popenoe, S. C. Mason* and *Fred. A. Marlatt.*

KENTUCKY:

38. Vegetables, Strawberries. March. *C. L. Curtis.*

40. Some Common Pests of the Farm and Garden. March. *H. Garman.*

LOUISIANA:

(4th report.) Pears, Plums, etc. *Wm. C. Stubbs.*

13. Sweet Potatoes. *H. A. Morgan* and *B. B Ross.*

(16.) Results of 1891, Orchard Fruits, etc. Jan. *J. G. Lee.*

(17.) Results of 1891, Fruits, etc. Jan. *D. N. Barrow.*

MAINE:

(1891 report.) Report of the Horticulturist (The Vegeable Garden, Fruit Tests and Experiments in Spraying). *W. M. Munson.*

1892 report, Part II. Secondary Effects of Pollination. *W. M. Munson.*

MARYLAND:

15. Experiment Vineyard. Dec. 1891. *T. L. Brunk.*

(1891 report.) Report of Agriculturist [Potato Experiments]. *A. J. Hayward.* Report of Horticulturist [Test Orchards, Spraying Experiments, Spraying Apparatus, Tomato Variety Test, Comparison of Potted with Transplanted Tomato Plants, Fertilizer Test with Tomatoes, Strawberry Work of the Season, Blackberry Tests, Notes and Observations, Lettuce Tests, Pea Root-Rot, Winter Budding, Acknowledgements with Comments]. *Thomas L. Brunk.*

17. Strawberries and Seed Potatoes. June. *James S. Robinson* and *E. H. Brinkley.*

18. Sweet Potatoes. Oct. *E. H. Brinkley.*

(1892 report.) Report of the Department of Horticulture. *James S. Robinson.*

MASSACHUSETTS:

State Station.

(9th report.) Report of the Department of Vegetable Physiology, The Rotting of Lettuce, The Powdery Mildew of the Cucumber, Various Diseases, Preventive Treatment. Jan. *James Ellis Humphrey.*

(42.) Sweet Corn. March. *C. A. Goessmann.*

Hatch Experiment Station.

16. A Brief Summary of Results in Electro-Culture, gathered from various sources ; also, Some Experiments made at the Station with Lettuce Grown under the Influence of Dynamical Electricity. Jan. *Clarence D. Warner.*

17. Experiments with Fungicides and Insecticides, Testing New Varieties of Grapes and Peaches, Protection of Peach Buds, Amount of Copper on Sprayed Fruit, The Siberian Crab as a Stock, Girdling Grape Vines, Keeping Qualities of Grapes, Report of Spraying Apparatus, Outline of Work for 1892. April. *Samuel T. Maynard.*

(18.) Fertilizers for Potatoes, Oats and Corn, Proximate Composition of Potatoes as affected by Fertilizers, Beans. April. *William P. Brooks.*

19. Report on Insects. May. *C. H. Fernald.*

(4th report.) Horticultural Division.

MICHIGAN:

79. Vegetable Tests. Jan. *L. R. Taft* and *H. P. Gladden.*

80. Fruits. Jan. *T. T. Lyon.*

81. Fruit notes, Strawberries, Raspberries, Russian Fruits and Orchard Fertilizers. March. *L. R. Taft.*

83. Insecticides and Fungicides. April. *L. R. Taft.*

85. Potato Tests. April. *L. R. Taft.*

88. Fruit Report. Dec. *T. T. Lyon.*

MINNESOTA:

24. Ornamental and Timber Trees, Shrubs and Herbaceous Plants in Minnesota. Notes on their Hardiness and Desirability. Oct. *Samuel B. Green.*

25. Report on Small Fruit, Notes from Trial Stations, Notes on Renewing old Strawberry Beds, Shading Strawberry Beds, Seedling Fruits, Analyses of Grapes, Spraying Grape Vines. Dec.

MISSISSIPPI:

(4th report.) Report of Horticultural Work [Strawberries, Raspberries, Vineyard, Potatoes, etc.]. Jan. *S. M. Tracy.*

9. The Southern Tomato Blight Jan. *Byron D. Halstead.*

(21.) Insects Injurious to the Cabbage. June. *Howard Evarts Weed.*

22. Grapes. Sept. *S. M. Tracy* and *F. S. Earle.*

MISSOURI:

18. Strawberries. Aug. *Chas. A. Keffer.*

NEBRASKA:

(5th report.) A Preliminary Report on the Native Trees and Shrubs of Nebraska. *Chas. E. Bessey.* Notes on Sweet Potatoes, Irish Potatoes, Onions, etc. *C. L. Ingersoll.*

(6th report.) Report of the Horticulturist. *F. W. Taylor.*

NEVADA:

(4th report.) Report of the Horticulturist. *R. H. McDowell.* Report of the Chemist, Experiments with Potatoes. *N. E. Wilson.*

17. The Woolly Aphis of the Apple. July. *F. H. Hillman.*

NEW JERSEY:

(1891 report.) Report of Chemist (Experiments with Fertilizers on Tomatoes, Potatoes and Sweet Potatoes, Field Experiments with Fertilizers upon Peach Trees, Experiments with Fertilizers upon Turnips, Experiments with Nitrate of Soda upon Strawberries).

Report of the Botanical Department (Some Fungi common to Wild and Cultivated Plants, Notes upon Peronosporeæ for 1891, Some Fungous Diseases upon Celery, Field Experiments with Soil and Black Rots of Sweet Potatoes, Field Experiments for Raspberry Anthracnose, An Investigation of Tomato Blight, Some Fungous Diseases of the Egg-Plant. The Anthracnose of the Bean—Remedy suggested, Notes upon Monilia fructigena, and Spore Germination, Damping Off, Decay Spots upon Leaves, Notes upon an Anthracnose of Variegated Plants. Fungous Diseases of Various Crops, Notes upon Treatment for Fungi, Nematodes as Enemies to Plants, A Study of Weed Roots, The Migration of Weeds, Eastern and Western Weeds, Why Foreign Weeds are so Bad, The Duty of Extermination). *Byron D. Halsted.*

Report of the Entomologist (The Rose-chafer, or Rosebug, Insects Injurious to the Blackberry, The Squash Borer, The Corn Bill-Bug, The Pear Midge, Cranberry Grasshoppers, The Angoumois Grain Moth, Farm Practice and Fertilizers to Control Insect Injury, The Plum Curculio, Insecticide Machinery, Miscellaneous Notes). *John B. Smith.*

86. Spraying for Insect and Fungous Pests of the Orchard and Vineyard. April. *John B. Smith* and *Byron D. Halsted.*

Special Bulletin N. Insects Injurious to the Blackberry. Nov. 1891. *John B. Smith.*

Special Bulletin O. Experiments with Nitrate of Soda upon Tomatoes. April. *Edward B. Voorhees.*

Special Bulletin P. Experiments with Fertilizers upon White and Sweet Potatoes. April. *Edward B. Voorhees.*

Special Bulletin Q. Some Fungous Diseases of the Celery. April. *Byron D. Halsted.*

Special Bulletin L. Observations upon the Peach for 1890. April. *Byron D. Halsted.*

90. Grasshoppers, Locusts and Crickets. Dec. *John B. Smith.*
91. Some Fungous Diseases of the Quince Fruit. Dec. *Byron D. Halsted.*

NEW MEXICO:

4. Fruit Trees, Forest and Shade Trees, Nut-Bearing Trees, Vegetables. Dec. 1891. *A. E. Blount.*
5. Fruit Insects, Vine Leaf-Hopper, Codlin Moth, Root Borers, Green June Beetle. March. *C. H. Tyler Townsend.*
7. Scale Insects in New Mexico. June. *C. H. Tyler Townsend.*
9. Insecticides and their Appliances. Dec. *C. H. Tyler Townsend.*

NEW YORK:

A. Cornell Experiment Station (Ithaca).

(1891 report.) Report of the Horticulturist. *L. H. Bailey.*

38. The Cultivated Native Plums and 'Cherries. June. *L. H. Bailey.*
41. On the Comparative Merits of Steam and Hot Water for Greenhouse Heating. Aug. *F. W. Card*, with Introduction by *L. H. Bailey.*
42. Second Report upon Electro-Horticulture. Sept. *L. H. Bailey.*
43. Some Troubles of Winter Tomatoes. Sept. *L. H. Bailey.*
44. The Pear-Tree Psylla. Oct. *Mark V. Slingerland.*
45. Tomatoes. Oct. *L. H. Bailey* and *L. C. Corbett.*
46. Mulberries. Nov. *L. H. Bailey.*
48. Spraying Apple Orchards in a Wet Season. Dec. *E. G. Lodeman.*

(49.) A New Maize and Its Behavior Under Cultivation, The Behavior of Some Egg-Plant Crosses, Fertilizers for Grape Cuttings, The Black-Knot of the Plum and Cherry, The Wild Potato of the Mexican Region, Do Fertilizers Affect the Quality of Tomatoes? The Vetch or Tare as an Orchard Plant, Substitutes for Glass in Greenhouse Roofs. Dec. *L. H. Bailey.*

B. State Experiment Station (Geneva).

40. Black-Knot of Plum and Cherry. March.
41. Influence of Copper Compounds in Soils upon Vegetation, Spraying with Fungicides for Prevention of Potato Blight, Analyses of Materials used in Spraying Plants. April.
44. Strawberries, A Brief Description of the Newer Varieties Tested this Season. Aug.
48. Some Bean Diseases. Dec.

NORTH CAROLINA:

83. Growing Celery in the South, Cultivation of Onions, Notes of Horticultural Work [Garden Vegetables and Small Fruits]. Feb. *W. F. Massey.*
84. Some Enemies of Truck and Garden Crops, Fungi, Insects and Remedies, Insects Beneficial to Truck and other Crops. April. *Gerald McCarthy.*
85. The Late Crop of Irish Potatoes in the South. April. *W. F. Massey.*

NORTH DAKOTA:

(2nd report.) Department of Horticulture and Forestry. Jan. *H. E. Stockbridge.*

4. Potato Scab and Possibilities of Prevention, A Disease of Beets Identical with "Deep Scab" of Potatoes, Hastening the Maturity of Potatoes. Dec. 1891. *H. L. Bolley.*

6. The Mustard Family. June. *C. B. Waldron.*

OHIO:

(1891 report.) Report of the Horticulturist. *W. J. Green.* Entomologist. *F. M. Webster.*

(43.) Greenhouses and Greenhouse Work, Fertilizers in the Greenhouse, Sub-Irrigation in the Greenhouse, The Water Bench. Crops Suitable for Forcing, Calendar of Operations, *W. J. Green.* Tomatoes as a Greenhouse Crop. *E. C. Green.* Lettuce as a Greenhouse Crop. *W. S. Turner.* Sept.

45. Insects Affecting the Blackberry and Raspberry. Dec. *F. M. Webster.*

OKLAHOMA:

(2.) Experiment Station Orchard, Vineyard, etc. March. *J. C. Neal.*

3. Insects (The Imported Cabbage Butterfly, The Cabbage Plusia, The Ball Worm, The Striped Melon Beetle, The Twig Girdler, The Chinch Bug, The Horn Fly). June. *J. C. Neal.*

(4.) Irish and Sweet Potatoes. Oct. *J. C. Neal.*

OREGON:

15. Test of Tomatoes, Cabbage, Peas, Lettuce, Radish, Cauliflower. Jan. *Geo. Coote.*

18. Insects Injurious to Young Fruit Trees, Codlin Moth, Kerosene Emulsion, Wireworms, Flea Beetles. March.

PENNSYLVANIA:

18. Notes on New and Old Varieties of Orchard Fruits and Small Fruits. Jan. *Geo. C. Butz.*

19. Information on Spraying Fruits. April. *Geo. C. Butz.*

RHODE ISLAND:

(4th report.) Report of the Horticulturist. *L. F. Kinney.*

(15.) Fungicides and Insecticides, and Apparatus for Applying Them, Black Rot of the Grape and Apple Scab, Codlin Moth, Cankerworm and Plum Curculio. April. *L. F. Kinney.*

SOUTH CAROLINA:

5. Methods of Keeping Sweet Potatoes. July. *J. F. Duggar.*

(5th report.) Report of the Horticulturist. *J. F. C. DuPré.*

SOUTH DAKOTA:

(30.) Applying Poison to Potatoes, Soap-suds for Cabbage Lice, A Cheap Spraying Pump. March. *I. H. Orcutt* and *J. M. Aldrich.*

TENNESSEE:

1, Vol. V. Fruit Trees and Experiments with Vegetables. Jan. *R. L. Watts.*

4, Vol. V. Experiments with Fruit Trees and Vegetables. Nov. *R. L. Watts.*

TEXAS:

(4th report.) Report of the Horticulturist. *H. Ness.*

23. Black Rot of the Grape, Life History, Treatment. Nov. *R. H. Price* .

UNITED STATES (Department of Agriculture):

A. Division of Vegetable Pathology.

Bulletin No. 2. California Vine Disease. *Newton B. Pierce.*

Bulletin No. 3. Report on the Experiments made in 1891 in the Treatment of Plant Diseases. *B. F. Galloway.*

(Journal of Mycology, 2 Vol. VII.) A Disease of Almond Trees, *Newton B. Pierce.* Suggestions in Regard to the Treatment of *Cercospora circumscissa*, *B. T. Galloway.* Club-Root in the United States, *A. C. Eycleshymer.* Field Notes, 1891, *Erwin F. Smith.* New Fungous Diseases of Iowa, *L. H. Pammel.* Remarks on the Fungus of a Potato Scab, *Prof. G. de Lagerheim.* Description of two New Species of Peronospora, *M. B. Waite.* Some Peronosporaceæ in the Herbarium of the Division of Vegetable Pathology, *W. T. Swingle.* New Species of Fungi, *J. B. Ellis* and *B. M. Everhart.*

B. Division of Entomology.

26. Reports of Observations and Experiments in the Practical Work of the Division of Entomology.

(Insect Life, 7 & 8 Vol. IV.) Potato-Tuber Moth. Bees of Great Value to Fruit and Seed Growers, *Frank Benton.* Some Bred West Virginia Braconidæ, *A. D. Hopkins.* Notes on the Habits of some California Coleoptera, *D. W. Coquillett.* Early Published References to some of our Injurious Insects, *F. M. Webster.*

Insect Life, 9 & 10 Vol. IV. The Pea and Bean Weevils. The Ravages of the Leopard Moth in Brooklyn, *Nicolas Pike.*

Insect Life, 11 & 12 Vol. IV. Some Inter-relations of Plants and Insects, *C. V. Riley.* The West Indian Rufous Scale, *T. D. H. A. Cockerell.* The First Larval Stage of the Pea Weevil.

Insect Life, 1 Vol. V. Rose Saw-Flies in the United States, *C. V. Riley.* Occurrence of *Bucculatrix canadensisella*, Chamb. On Birches in Rhode Island, *A. S. Packard.* New Injurious Insects of a year, *C. V. Riley.* A new Sweet Potato Saw-Fly, *C. L. Marlatt.* On the Nomenclature and on the Oviposition of the Bean Weevil. Notes on the Habits of Some Species of Cleoptera Observed in San Diego county, Cal., *F. E. Blaisdell.* Biologic Notes on New Mexico Insects, *C. H. Tyler Townsend.* Further Notes on the New Herbarium Pest, *C. V. Riley.* The Australian Enemies of the Red and Black Scales.

Insect Life, 2 Vol. V. The Possible and Actual Influence of Irrigation on Insect Injury in New Mexico, *C. H. Tyler Townsend.* Notes on Ægeriidæ of Central Ohio, II. *D. S. Kellicott.* The Bean Weevil, *M. V. Slingerland.* Orthezia insignis as a Garden Pest, *T. D. A. Cockerell.* Food-Plants of some N. A. Membracidæ, *F. W. Goding.* Notes of the Year in New Jersey, *John B. Smith.* The Pear-Tree Psylla, The Pear-Leaf Blister Mite, *M. V. Slingerland.* The Parsnip Web-Worm, *E. B. Southwick.* Notes from the Mississippi Station, *Howard Evarts Weed.* Notes on Injurious Insects, *Herbert Osborn.* Kansas Notes, *V. L. Kellogg.* Notes on Plant Faunæ, *T. D. A. Cockerell.* Spraying with Arsenites *vs.* Bees, *F. M. Webster.* Notes on Injurious Insects in Canada in 1892, *James Fletcher.* An Australian Scymnus Established and Described in California, *C. V. Riley.* Further Notes on the Food of *Limax campestris*, Binney, *F. M. Webster.*

C. Office of Experiment Stations.

Miscellaneous Bulletin No. 7. Proceedings of the Fifth Annual Convention of the Association of American Agricultural Colleges and Experiment Stations.

Bulletin No. 8. Lectures on the Investigations at Rothamsted Experimental Station.

Bulletin No. 12. Organization Lists of the Agricultural Experiment Stations and Agricultural Schools and Colleges in the United States.

UTAH:

(3d report.) Report of the Horticulturist. *E. S. Richman.*

12. Experiments with Garden Vegetables [Sweet Corn, Radishes, Winter Radishes, Beets and Lettuce]. March. *E. S. Richman.*

14. Different Modes of Cutting Seed Potatoes, Injuring Insects, Remedies for the Plant Louse, The Flea Beetle. June. *E. S. Richman.*

18. Notes on Forest and Fruit Trees. Oct. *E. S. Richman.*

VERMONT:

(5th report.) Report of the Botanist. *L. R. Jones.*

(28.) Plant Diseases, [Potato Blight and Rot, A New Potato Disease, Potato Scab, Apple and Pear Scab]. April. *L. R. Jones.*

VIRGINIA:

(1890-91 report.) Report of Horticulture, Entomology and Mycology. Jan. *Wm. B. Alwood.*

11. Vegetables, Tomatoes, Potatoes, Onions, Cabbage and Cauliflower. Oct. 1891. *Wm. B. Alwood.*

15. Vol. I. Treatment of Diseases of the Grape. Preparations used as Fungicides, Treatment of the Vineyards, Is the Sprayed Fruit Unwholesome? April. *Wm. B. Alwood.*

17. Vol. I. Four Diseases of the Apple [Rust of the Foliage, Scab of Foliage and Fruit, Bitter Rot of the Fruit, Brown Spot of the Foliage]. Remedial or Preventive Treatment, Methods of Treating, Preparations Recommended. June. *Wm. B. Alwood.*

22. Vol. I. Bush Fruits. Nov. *Wm. B. Alwood.*

WASHINGTON:

(1st report.) Notes on Potatoes, Sweet Corn, Garden Peas, Fruits, etc. Feb. *George Lilly.*

4. Wireworms. May. *J. O'B. Scobey.*

(5.) Trees and Tree Growth. May. *E. R. Lake.*

WEST VIRGINIA:

17. Forest and Shade Tree Insects. May, 1891. *A. D. Hopkins.*

20. Potato Culture and Fertilization, and Tests of Some Varieties of Tomatoes. Jan. *D. D. Johnson.*

21. Injurious Insects and Plant Diseases, Spraying Apparatus. April. *A. D. Hopkins* and *C. F. Millspaugh.*

27. Notes on Pruning. Nov. *F. Wm. Rane.*

WISCONSIN:

(8th report.) Experiments with the Potato, Strawberry and Raspberry Tests, A Breeding Experiment with Tomatoes, Experiment in the Treatment of the Apple Scab, A New Preventive Against the Cabbage Maggot, Experiments in Spraying for the Aphis. *E. S. Goff.*

WYOMING:

(1891 report.) Report of Horticulturist and Botanist. *B. C. Buffum.*

5. Horticulture in Albany and Natrona counties. Horticulture in Wyoming. Feb. *B. C. Buffum.*

7. Insecticides. July. *F. J. Niswander.*

8. Irrigation and Duty of Water, Potatoes, Root Crops, Garden Vegetables and Fruits. Oct. *B. C. Buffum.*

§ 8. *Subject Index of Experiment Station Horticultural Literature in North America for the year 1892 (including Publications of the Department of Agriculture).*

Explanation.—Numbers standing alone refer to the number of the bulletin. Those preceded by p. or pp. refer to the page of the reports. A title index of Experiment Station literature is given in § 7.

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ALMOND, DISEASES AND INSECTS OF—
Cercospoar circumscissa. Jour. Mycology Vol. VII. 2.

APPLE, CULTURE AND VARIETIES—
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Leaf-Roller Col. 19. *Codlin-Moth* and *Tent-Caterpillar*, Ky. 40. *Aphis*, *Tent Tree Caterpillar*, *Woolly Louse*, *Codlin-Moth*, *Curculio*, *Bucculatrix*, *Skeletonizer*, *Leaf-Crumpler*, *Buffalo Tree-Hopper*, *Pruner*, *Round-headed* and *Flat-headed Borers*, *Leaf-Blight*, *Leaf-Rust* and *Apple-Scab*, Md. 1891 rep. p. 382. *Apple-Scab*, Mass. Hatch 17. *Codlin-Moth*, *Tent Caterpillar*, *Canker-Worm* and *Apple-Scab*, Mich. 83. *Codlin-Moth*, Maine 1891 rep. p. 100, *Apple-Scab*, p. 110. *Woolly Aphis*, Nev. 17, N. J. 12th rep. p. 305. *Borer*, N. J. 86. *Scab*, *Codlin-Moth*, R. I. 15. *Scab*, Vt. 28, Va. 15, Vol. I., W. Va. 21. *Spot*, Vt. 5th rep. p. 133. *Scab* and *Bitter Rot*, Conn. State, 111. *Scab*, Wis. 9th rep. p. 160. *Woolly* and *Green Aphis* and *Flat-headed Borer*, Ore. 18. *Caterpillar*, Ore. 18. *Scab*, U. S. Dep. of Veg. Pathology Bulletin 3. *Codlin-Moth*, Insect Life Vol. V. 12 p. 79.

APRICOT, CULTURE AND VARIETIES—
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Beetle, Insect Life Vol. V. 2 p. 98. *Zebra Caterpillar*, Insect Life Vol. V. p. 125.

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Chestnut, Culture and Varieties—
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Nattermüller, Otto. Der Obstbau in den Zwölf Kalendermonaten. Trowitzsch u. Sohn, Frankfurt a. d. O.

Niven, Robert, and Others. The New Celery Culture. Rural Library Series. Rural Publishing Co., New York.

North, Marianne. Recollections of a Happy Life. MacMillan & Co., London.

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Ormerod, Miss. Observations on Injurious Insects. Fifteenth Report. Simpkin, Marshall & Co., London.

Paillieux et Bois. Le Potager d'un Curieux. Second edition. Librairie Agricole de la Maison Rustique. Paris.

Paul, William. Contributions to Horticultural Literature; Being a Selection of Articles written for Gardening Periodicals, and Papers Read before various Societies, from 1843 to 1892. William Paul & Son, Waltham Cross, England.

Pierce, Newton B. The California Vine Disease; A Preliminary Report of Investigations. Bulletin 2, Div. of Veg. Path. U. S. Dept. Agri.

Reichenbach, Heinrich Gustav. Xenia Orchidacea. III. Band, 5 Heft. F. A. Brockhaus, Leipzig.

Rexford, E. E. Flower Bulbs, and How to Grow Them. Chicago.

Robbins, Mary Caroline. The Rescue of an Old Place. Houghton, Mifflin & Co., Boston.

Robinson, John. Our Trees. Essex Institute, Salem, Mass. (1891.)

Robinson, W. Garden Design and Architect's Gardens. London.

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Ruth, Dr. Revision der Arten von Trollius. Berlin. (1891).

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Sargent, Charles Sprague. The Silva of North America. Vol. III. Anacardiaceæ-Leguminosæ. Vol. IV. Rosaceæ-Saxifragaceæ.

Sawer, J. Ch. Odorographia. A Natural History of Drugs used in the Perfume Industry; Intended to serve Growers, Manufacturers and Consumers. Gurney & Jackson, London.

Schilling, H. F. v. Des Deutschen Landmann's Jahrbuch für 1893. Trowitzsch u. Sohn.

Schmidt, J. C. Die Bindekunst, Leitfaden zur Herstellung aller Arbeiten aus Blumen. J. C. Schmidt, Erfurt.

Schneider, George. The Book of Choice Ferns for the Garden, Conservatory and Greenhouse. Parts I. to XI. L. Upcott Gill & Co., London.

Schumann, K. Über Afrikanische Ameisenpflanzen. Berlin.

Schwendener and Krabbe. Untersuchungen über die Orientirungstorsionen der Blätter und Blüten. Berlin.

Sedding, John D. Garden-Craft, Old and New ; with Memorial Notice by the Rev. E. F. Russell. Kegan Paul, French, Trübner & Co., London.

Sedding, John D. Vegetable Sculpture. Kegan Paul, French, Trübner & Co., London.

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Stein. Orchideënbuch. Paul Parey. Berlin.

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Strong, W. C. Fruit Culture, and the Laying Out and Management of a Country Home. Third edition. Rural Publishing Co., New York.

Stutzer, Dr. A. Stallmist and Kunstdünger. Eighth edition. F. Cohen, Bonn.

Terra und Schorsch. Allgemeines Gartenbau-Addressbuch für das Jahr 1892. R. de Terra, Berlin.

Tschaplowitz, Dr. F. Humus im Gartenbetriebe und in der Landwirtshaft. Eugen Franks, Oppeln, Germany.

Tschirch, A. Indische Heil und Nutz Pflanzen und der Cultur. Berne.

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Vergara, D. Mariano. Bibliografia de la Rosa. Madrid.

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Wagner, Dr. P. Die Anwendung Künstlicher Dungemittel. Paul Parey, Berlin.

Wendisch, Ernst. Die Champignon-Kultur in Ihrem Ganzen Umfange. B. Grundmann, Berlin.

Wesselhöft, Johannes. Der Rosenfreund. B. F. Voigt, Weimar.

Whittaker, Joseph A Descriptive List of Deer Parks and Paddocks of England. Ballantyne, Hanson & Co., London.

Williamson, William. The Horticultural Exhibitors' Handbook: A Treatise on Cultivating, Exhibiting, and Judging Plants, Flowers, Fruits, and Vegetables. Revised by Malcolm Dunn. Blackwood & Sons. London.

Woolward, Miss Florence. The Genus Masdevallia. With notes by F. C. Lehmann, German Consul in the Republic of Colombia. Issued by the Marquess of Lothian. In parts (to be completed in about twelve parts).

Wright, C. H. and Dewar, D. Johnson's Gardener's Directory. Revised edition. Issued in Parts. G. Bell & Sons, London.

Wright, John. The Fruit Grower's Guide. J. S. Virtue & Co., London.

Young, Ermentine. Canning and Preserving Fruits and Vegetables, and Preparing Fruit-Pastes and Syrups. Rural Library Series. Rural Publishing Co., New York.

§ 10. *Horticultural Periodicals of the World. 1892.*

Those journals which are known to have been in continuation in 1891 or later, are marked with an asterisk (*). The prices attached to the various journals are the domestic ones, those for which the journals circulate in their respective countries. The editor's name or the publisher's follows the name of the journal.

NORTH AMERICA.

American Farm and Horticulturist.* L. J. Thompson. *Quarterly;* 25 cts. Lakewood, Ohio. (Sold in July, 1892, to Southern Horticulturist, but upon the failure of that journal it was taken back by the original owners. The July and October issues were omitted.)

American Florist.* American Florist Co. *Weekly;* $1. Chicago.

American Gardening.* L. H. Bailey. *M.;* $1. New York.

California Fruit Grower.* B. N. Rowley. *W.;* $3. San Francisco.

Canadian Horticulturist.* L. Woolverton. *M.;* $1. Grimsby, Ontario.

Florists' Exchange.* A. T. de la Mare Co. *W.;* $1. New York.

Fruit Growers' Journal.* *Semi-Monthly.* Cobden, Ill.

Fruit Trade Journal.* *W.;* $3. New York.

Fruit Grower.* *W.;* $2. Macon, Georgia.

Fruits and Flowers.* D. H. Stearns. *M.;* $2. Portland, Oregon. (Discontinued at conclusion of second volume, June, 1892).

Garden and Forest.* C. S. Sargent. *W.;* $4. New York.

Gardening.* William Falconer. *Twice M.;* $1. Chicago.

Green's Fruit Grower.* C. A. Green. *M.;* 50 cents. Rochester, N. Y.

Journal of the Columbus Horticultural Society.* *Quart.;* Columbus, Ohio.

Leaflet.* E. S. Thompson. *M.;* 25 cents. West Casco, Mich.

Mayflower.* J. L. Childs. *M.;* 50 cents. Queens, N. Y.

Meehan's Monthly.* T. Meehan. *M.;* $2. Germantown, Philadelphia.

Nebraska Horticulturist.* J. G. Carpenter. *Quart.;* 25 cents. Bower, Neb.

Northwest Horticulturist.* Boothroyd & Tonneson. *M.* Tacoma, Wash.

Orchard and Garden.* *M.* Little Silver, N. J. (Discontinued; purchased by the Mayflower late in the year.)

Orchard Fruits.* William Dyke. *M.;* 50 cents. Effingham, Ills.

Orange Belt. L. M. Holt. *M.;* $2. Rialto, California.

Ornamental and Forest Tree Grower.* J. J. Pinny. *M.;* 50 cents. Evergreen, Wis.

Park's Floral Magazine.* G. W. Park. *M.;* $1. Libonia, Pa.

Purdy's Fruit Recorder and Evaporator.* A. M. Purdy. *Quart.;* 25 cents. Palmyra, N. Y.

Science and Horticulture.* C. R. Orcutt. *M.;* $2. Orcutt, Cal.

Seed Time and Harvest.* *M.* La Plume, Pa.

Smith's Small Fruit Farmer.* B. B. Smith. *Quart.;* 50 cents. Lawrence, Kansas.

Southern Floral Magazine. Morton & Titus. *M.;* 50 cents. Clarksville, Tenn.

Southern Horticulturist. *M.* Humboldt, Tenn. (Discontinued; see American Farm and Horticulturist, above.)

Success with Flowers.* Dingee & Conard Co. *M.;* 25 cents. West Grove, Pa.

Vick's Magazine.* Vick Pub. Co. *M.;* 50 cents. Rochester, N. Y.

Vineyardist.* J. H. Butler. *S.-M.;* $1. Penn Yan, N. Y.

Western Garden.* J. W. Page. *M.* Des Moines, Iowa.

Woodsman.* Geo. W. Caldwell. *M.;* 50 cents. Evergreen, Alabama.

ENGLAND.

Amateur Gardening. London.

Curtis' Botanical Magazine.* Sir J. D. Hooker. *M.;* 42s., colored. London.

Fruit Farm Review.

Garden.* William Robinson. *W.;* 19s. 6d. London.

Garden Almanac. London.

Gardeners' Chronicle.* Maxwell T. Masters. *W.;* 15s. London.

Gardeners' Magazine.* *W.;* 11s. 6d. London.

Gardening Illustrated.* William Robinson. *W.;* 6 s. 6 d. London.

Gardening World.* Brian Wynne. *W.;* 6 s. 6 d. London.

Horticultural Times.* Alfred Root & Son. *W.;* 6 s. 6 d. London.

Journal of Horticulture.* Robert Hogg. *W.* London.

Northern Gardener.* C. H. Betts. *W.;* 6s. 6 d. Manchester. (Title changed to British Gardening, April 15, 1892.)

IN FRENCH.

Annales de l'Horticulture. Brussels.

Annuaire Général d'Horticulture. Toulouse.

Belgique Horticole. Ghent.

Bulletin d'Arboriculture. Ghent.

Bulletin d'Arboriculture, de Floriculture, et de culture Potagère. Ghent.

Bulletin d'la Fédération des Sociétés d'Horticulture de Belgique. Minister of Agriculture. Ghent.

Bulletin de l'Horticulture. Clermont (Oise).

Bulletin de l'Société d'Horticultnre et de Viticulture du Puy-de-Dome. *Quart.;* 10 francs. Clermont, Ferrand.

Bulletin de la Société Horticole, Viticole, et Forestière de Sens. Auxerne.

Bulletin de la Société d'Horticulture de Bougival.* 6 francs. Bougival, France.

Bulletin Bi-Mensuel de la Société Centrale de l'Arrondissement de Mons.* Ch. Deltenre. 3 francs.
Bulletin du Circle Floral d'Anvers. Anvers.
Bulletin du Syndicat des Viticulteurs de France. Paris.
Bulletin Horticole. Huy.
Bulletin Mensuel de la Société de Horticulture Pratique du Rhone. Lyons.
Bulletin Mensuel de la Société Centrale d'Horticulture de l'Arrondissement de Mons.* *M.;* 3 francs.
Chasse et Pêche, Acclimation et Élevage. Organ of the Royal Society of St. Hubert. Brussels.
Dodonée.* 2 francs. Uccle. In French and Dutch.
Ferme (la) et Le Jardin.* C. C. Bouillot. *S.-M.;* 4 francs. Huy.
Flore des Serres et Jardins de l'Angleterre.* Ghent.
Horticulteur. Mons.
Horticulteur Challonnais.*
Jardin.* H. Martinet. *S.-M.;* 12 francs. Paris.
Jardin de la France. Tours.
Journal d'Agriculture et d'Horticulture.* *S.-M.;* 5 francs. Bordeaux.
Journal de l'Horticulture Pratique. Paris.
Journal des Orchidées.* Lucien Linden. *S.-M.;* 10 francs. Brussels.
Journal de la Société Centrale d'Horticulture. Paris.
Journal de Vulgarisation de l'Horticulture. Paris.
Journal des Roses.* Pierre Cochet. *M.;* 12 francs. Paris.
Illustration Horticole.* J. Linden. *M.;* 30 francs. Brussels.
Lindenia, Iconographie des Orchidées.* Brussels.
Lyon Horticole.* Viviand-Morel. *S.-M.;* 8 francs. Lyons.
Moniteur d'Horticulture.* Lucien Chauré. *S.-M.;* 6 francs. Paris.
Moniteur d'Horticulture, Arboriculture, etc. Paris.
Orchidophile.* A. Godefroy-Lebeuf. M.; 2 francs, 50 cents. Paris.
Organe du Centre Horticole.* Charles Bloeykens. *S.-M.;* Meirelbeke-lez-Gand. Belgium.
Progrés Agricole et Viticole.* L. Degrully. *W.;* 12 francs. Montpelier.
Revue Horticole.* E. A. Carrière. *S.-M.;* 20 francs. Paris.
Revue de l'Horticulture Belge.* Éd. Pynaert. *M.* Brussels.
Revue Horticole et Viticole.* E. Vancher. *M.;* 8 francs. Geneva, Switzerland.
Revue Vinicole. Paris.

IN GERMANY.

Deutsche Garten-Zeitung. Leipzig.
Deutscher Garten. Berlin.
Deutcher Garten-Kalender. Berlin.
Deutsches Magazin für Garten-und Blumenkunde. Stuttgart.
Freyhoff's Garten-und Ackerbau-Zeitung. Oranienburg.
Fruchtgarten.* Julius Jablanzy. *M.;* 3 florins. Vienna.
Gärtner. Berlin.
Garten-und Blumenfreund. Cassel.
Garten-und Blumenzeitung. *M.;* 15 marks. Hamburg.
Gartenflora.* L. Wittmack. *M.;* 20 marks. Berlin.
Hamburger Garten-und Blumen-Zeitung. Hamburg.

Handelsblatt für den Deutschen Gartenbau und die mit ihm verwandten Zweige.* *S.-M.* Berlin.
Illustrite Garten-Zeitung. Stuttgart.
Illustrite Praktische Blätter.* W. Richter. *S.-M.;* 3 florins. Vienna.
Journal für Landwirtschaft.* G. Liebscher. *Quart.;* 10 marks. Berlin.
Monatsblatt für Gartenbau. Kiel.
Monatsschrift des Gartenbauvereins.* Rudolf Noack. *M.;* 2 marks, 50 cents. Darmstadt.
Monatschrift für Kakteenkunde.* Dr. Paul Arendt. *M.;* 2 marks. Berlin-Friedenau.
Monatsschrift für Obst und Weinbau. Frauenfeld.
Nachrichten aus dem Gebiete des Gartenbaus, der Landwirthschaft, Fisherei und Jagd. Vilshofen und Hacklberg.
Natur und Haus.* Staby and Hesdörffer. Berlin.
Obstbau.* Karl Gussman. *M.;* 6 marks. Stuttgart.
Obstgarten. Klosterneuburg, bei Wien.
Obstmarkt. Berlin.
Officielle Ausstellungs-Zeitung der Herbst-Ausstellung der Kölner Gartenbau-Gesellschaft im Volksgarten.* Köln.
Pomologische Monatschefte. Stuttgart.
Praktische Obstzüchter. Klosterneuburg bei Wien.
Praktische Ratgeber im Obst-und Gartenbau.* Johannes Böttner. *W.;* 4 marks. Frankfurt a. O.
Rheinische Blätter für Obst-Wein-und Gartenbau. Strassburg.
Rheinische Gartenschrift. Carlsruhe. Vereinigte Frauendörfer Blätter. Frauendorf.
Rosen-Zeitung.* P. Lambert. *M.;* 4 marks. Trier a Mosel.
Schleswig-Holsteinische Zeitschrift für Obst-und Gartenbau.* *M.;* 1 mark. Kiel.
Schweizerische Zeitschrift für Obst-und Weinbau. Dr. Müller-Thurgau. *S.-M.;* 5 marks. Wädensweil.
Schweizerische Gartenbau.* Müller-Thurgau und Echtermeyer. Wädensweil, Switzerland.
Traube.* Curt Weigelt: *M.;* 2 marks. Berlin.
Wiener Illustrirte Garten-Zeitung.* Dr. G. R. Beck von Mannagetta. *M.;* 16 marks. Vienna.
Zeitschrift für Obst-und Gartenbau. Leipzig.
Zeitschrift für bildende Gartenkunst.* Karl Kampel. *S.M.;* 10 marks. Berlin.

IN ITALIAN, SPANISH, PORTUGUESE.

Bulletino della R. Societa Toscana d'Horticultura.* *M.;* 10 lire. Florence, Italy.
Fruttae Vino. Milan.
Giardini. Milan.
Jornal de Horticultura Pratica.* Eduardo Sequeira. *M.;* 13 francs. Oporto, Portugal.
Orticultura Genovese. Genoa.
O' Floricultor. Oporto.
Revista de Horticultura. Rio de Janeiro.
Revista ortocola. Pallanza.

MISCELLANEOUS.

Dansk Havetidende. Copenhagen.
Gyümöleskiztesz és Konyhakertészeti Füzetek.* Budapest.
Gartner-Tidende. L. helweg. *W.;* 6 kroner. Copenhagen.
Het Neederlandsche Tuinbowblad.* Hugo de Vries. *W.;* 5 francs. Amsterdam.
Horticulturist.* The Official Journal of the Horticultural Society of New South Wales. *M.;* Sidney, Australia.
Journal of the Board of Viticulture. Victoria, Australia.
Kertészeti Füzetek. Budapest.
Pycckaro Cagobogcmba (Russian Gardening).* *W.;* 4 rupees ($2). Moscow.
Queensland Horticulturist.* *W.* Soutter, Brisbane.
Russkoe Sadovodstvo.* A. K. Grell. *W.;* 4 roubles. Moscow.
Sempervirens.* Gronewegen & Co. Amsterdam.
Tidning För Trägardsodlare.* Erik Lindgren. *W.;* 2 kroner, 50 öre. Stockholm.
Vigneron and Fruit Growers' Journal. Australia.

§ 11. *Tools and Conveniences of the Year.*

VARIOUS DEVICES FOR FACILITATING HORTICULTURAL LABOR, WHICH HAVE BEEN INVENTED OR FIRST PROMINENTLY MENTIONED IN 1892.

[None of the devices here described are in any way recommended by the Editor.]

SECTIONAL PLOW BEAM.—(Figs. 1 and 2.) A joint is made in the beam, about a foot from the iron standard, to allow of turning and moving about trees. The tongue of the joint should be about eight inches long, and the parts should be held together by a tight fitting ¾-in. bolt.—*American Agriculturist, 305.*

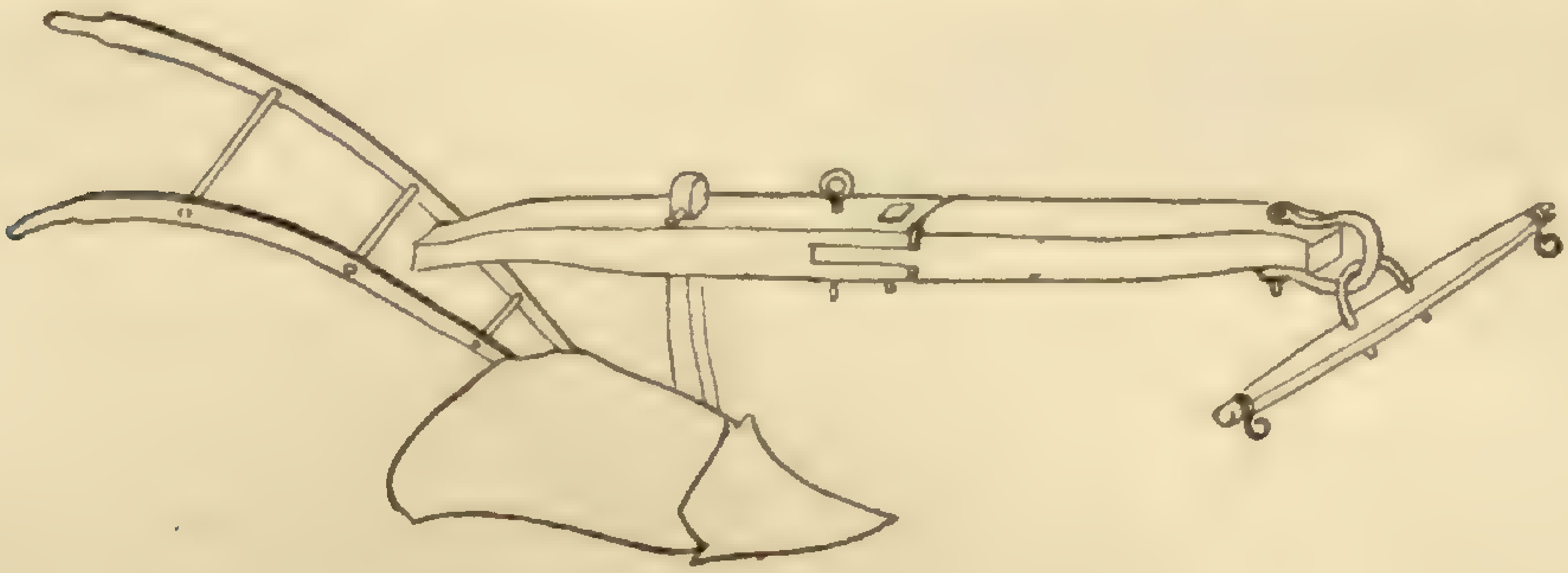


FIG 1.

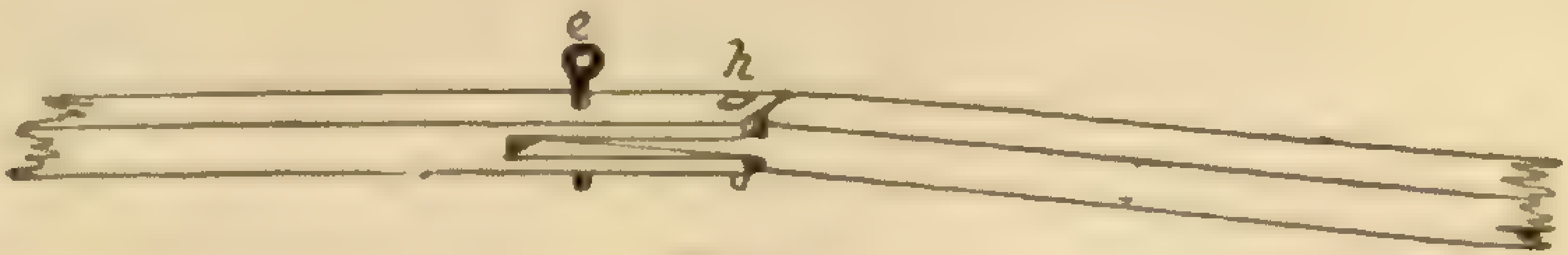


FIG. 2.

HOME-MADE SUBSOIL PLOW.—(Fig. 3.) The standard is a bar of iron two feet long, two and a half inches wide and about half an inch thick, hammered to an edge at the lower end, and then drawn to a flattened point, so as to admit a half-inch rivet to go through near the point, then up through a steel plate (mold-board) about half an inch thick, and riveted down. The steel plate is made sharp in front and somewhat pointed, in shape and width about like a man's two hands when placed upon the table with the palms down and thumbs out of sight, showing a little of each wrist. A mortice in the beam admits the standard, and another an iron rod for brace. The beam is about 5½ feet long, with a wooden roller in front to gauge the depth. One strong horse will draw this tool in the furrow made by an ordinary plow, and stir up the soil three or four inches below the line of the surface plowing.—*W. J. Noble, in American Gardening, 168.*

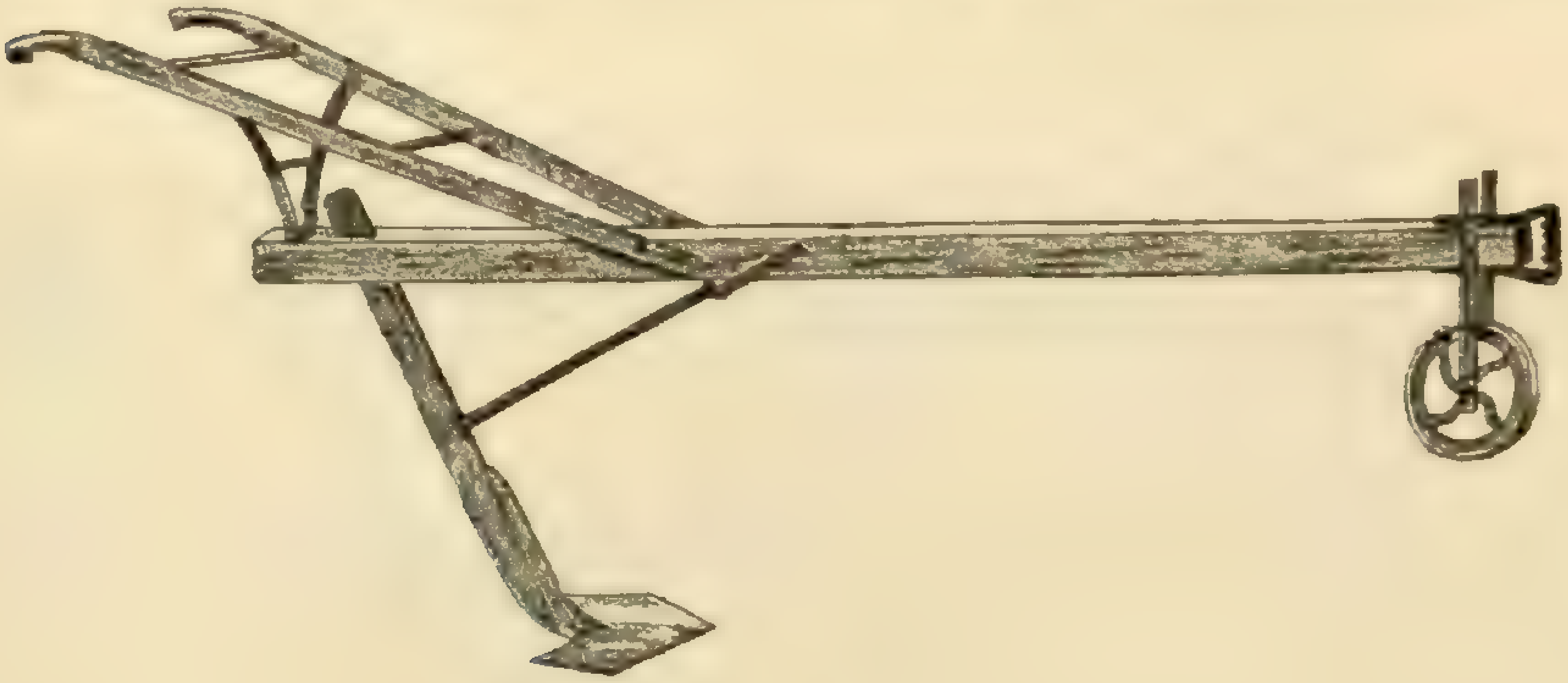


FIG. 3.

ROLLER AND MARKER—(Fig. 4.) An ordinary log marker, 3 or 4 feet long, with iron pins driven in the center on each side to secure the handle. Holes are bored in the marker at intervals and pegs inserted to make a check-row marker. Or bits of rope are wound about it to make a continuous mark.—*Greiner's New Onion Culture. Also, American Gardening, 247.*

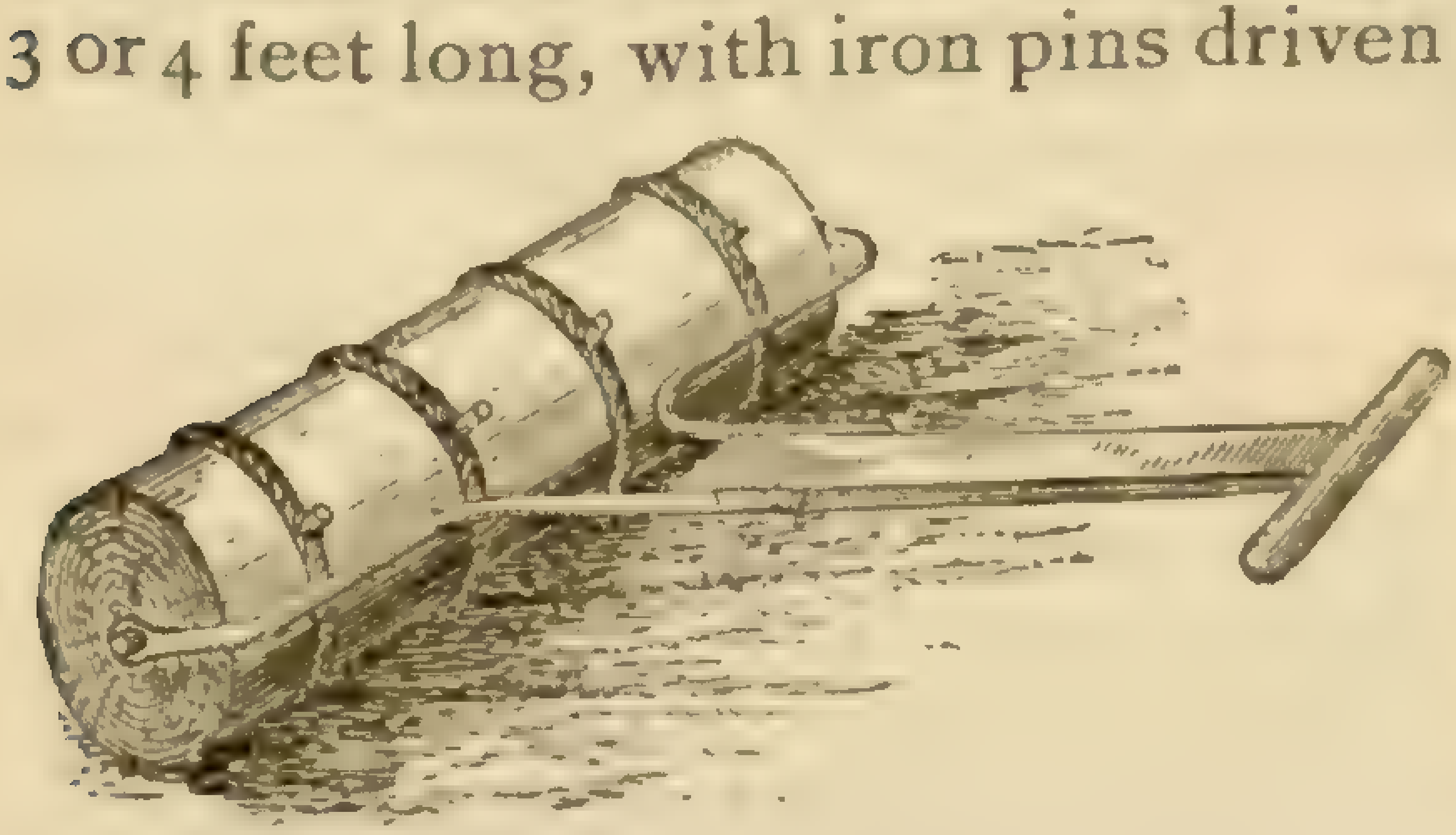


FIG 4.

HOME-MADE GARDEN-ROLLER.—(Fig. 5.) Take a sound piece of chestnut log 15 or 18 inches long and a foot or so in diameter. Make it round and smooth. Insert iron pins or bolts at each end. Fasten the roller part to a simple handle by means of two pieces of wagon-tire, as shown in the illustration.—*American Gardening, 104.*

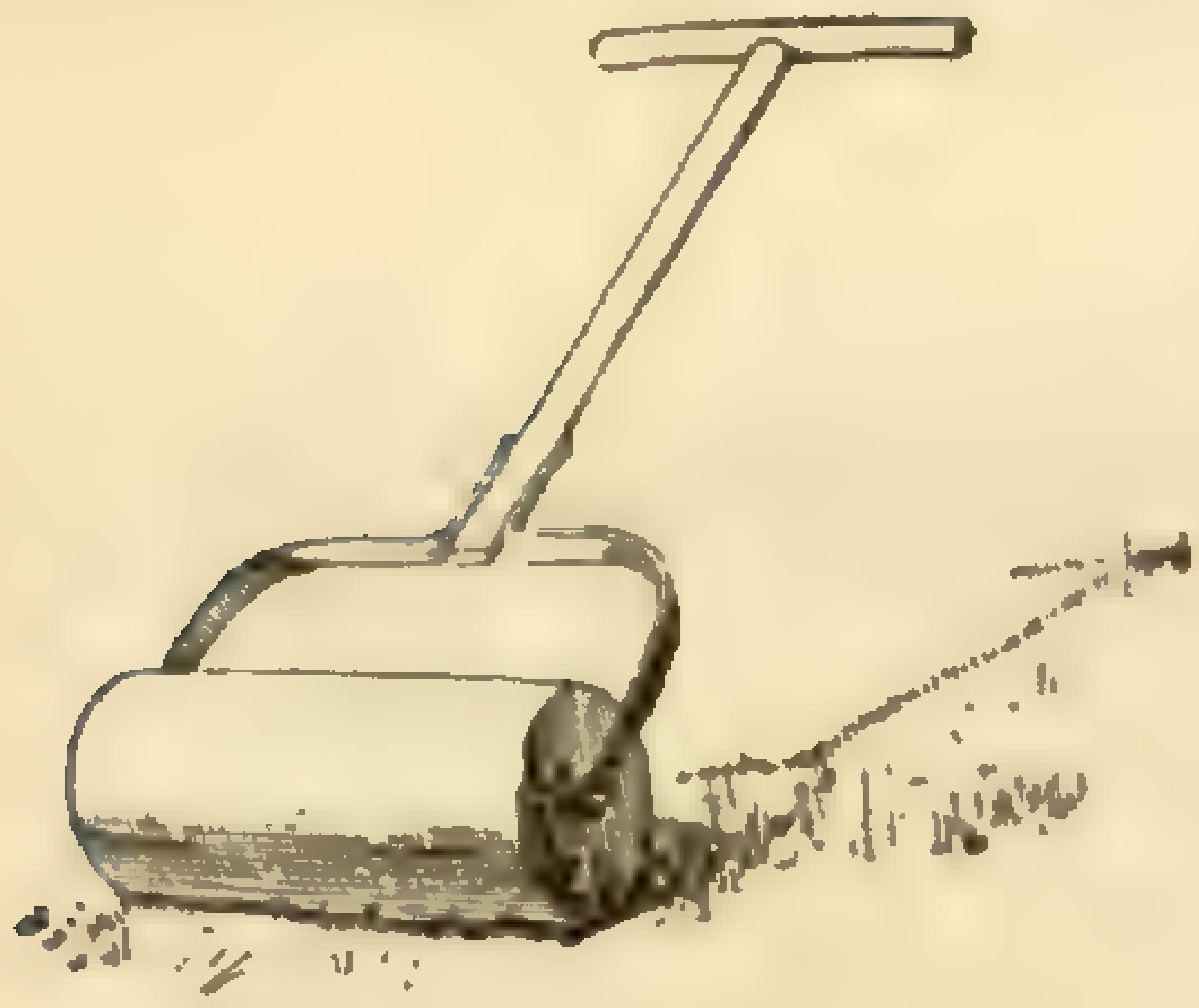


FIG 5.

GARDEN ROLLER.—(Fig. 6.) Is made of a belt pulley—mine being 18 inches in diameter with a 10-inch tire, and framed as shown in sketch. It rolls the rows leaving the space between loose.—*W. W., in American Gardening, 41.*

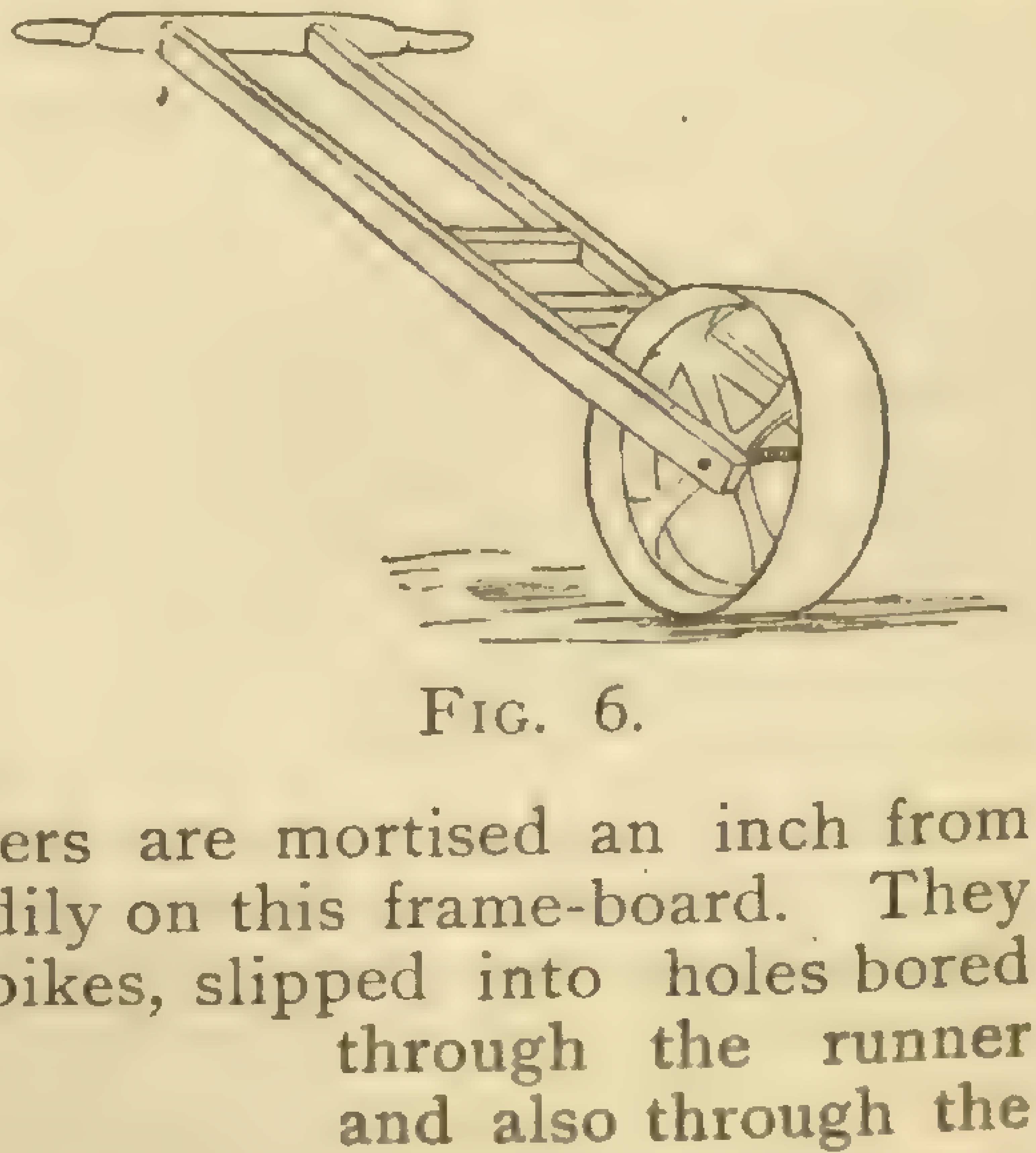


FIG. 6.

ADJUSTABLE MARKER. (Fig. 7.) The marks are made by runners about 30 inches in length, 8 inches wide and 2 inches thick. The center runner is but six inches wide, and is spiked to a board 8 feet long and 8 inches wide. The end runners are mortised an inch from the top, so that they slip readily on this frame-board. They are held in place by wire spikes, slipped into holes bored through the runner and also through the frame-board. The distance can be readily varied to suit different needs. The marker may be drawn or pushed.—*J. H. Van, in American Gardening, 561.*

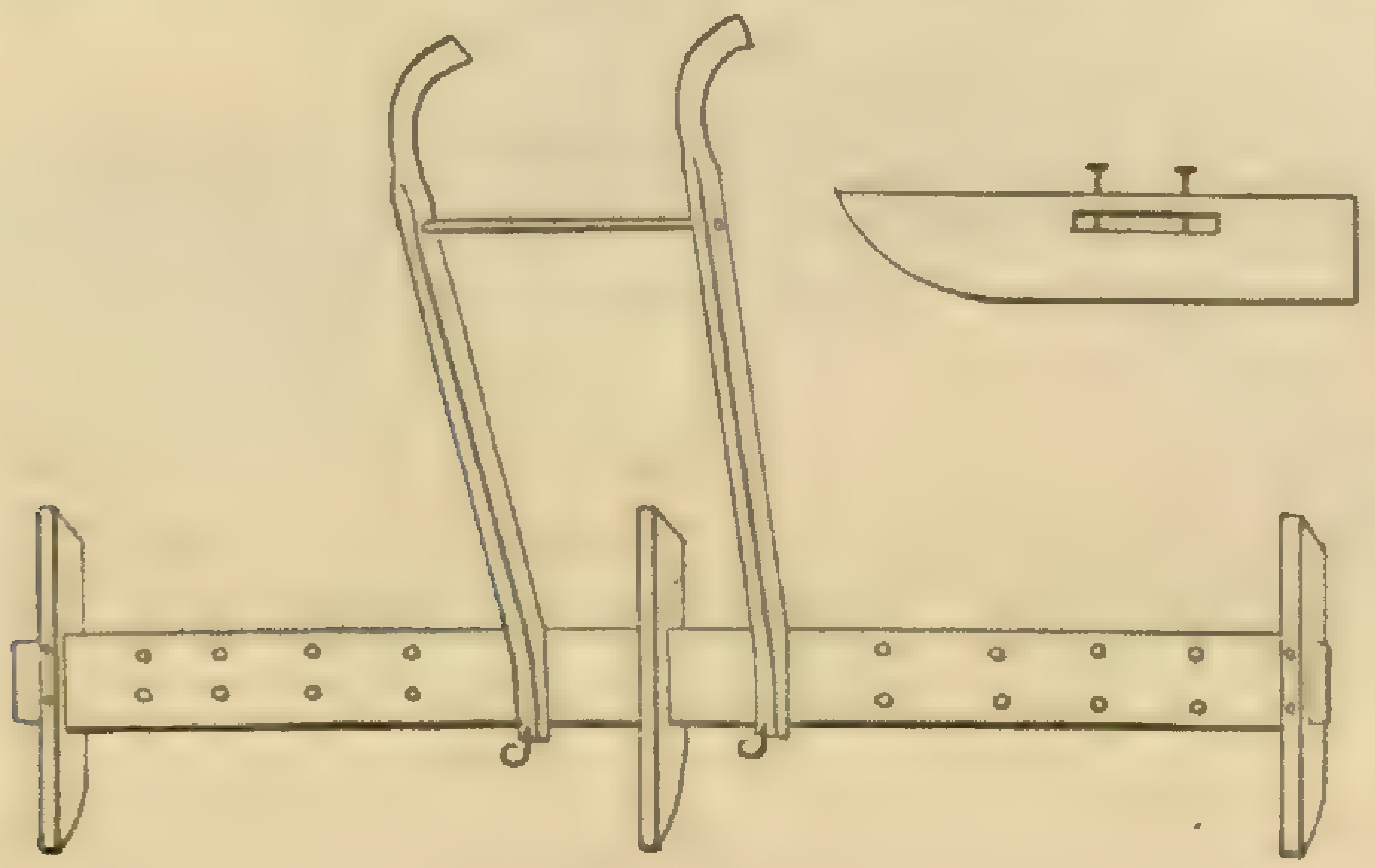


FIG. 7.

MARKER.—(Fig. 8.) The instrument is designed to run over a wire which has been stretched where the row is desired. The wheel is kept clean by means of the spur which extends into the groove. —*Maurice Lacaze, in Journal d'Agriculture Pratique* (*Revue Horticole, 184*).

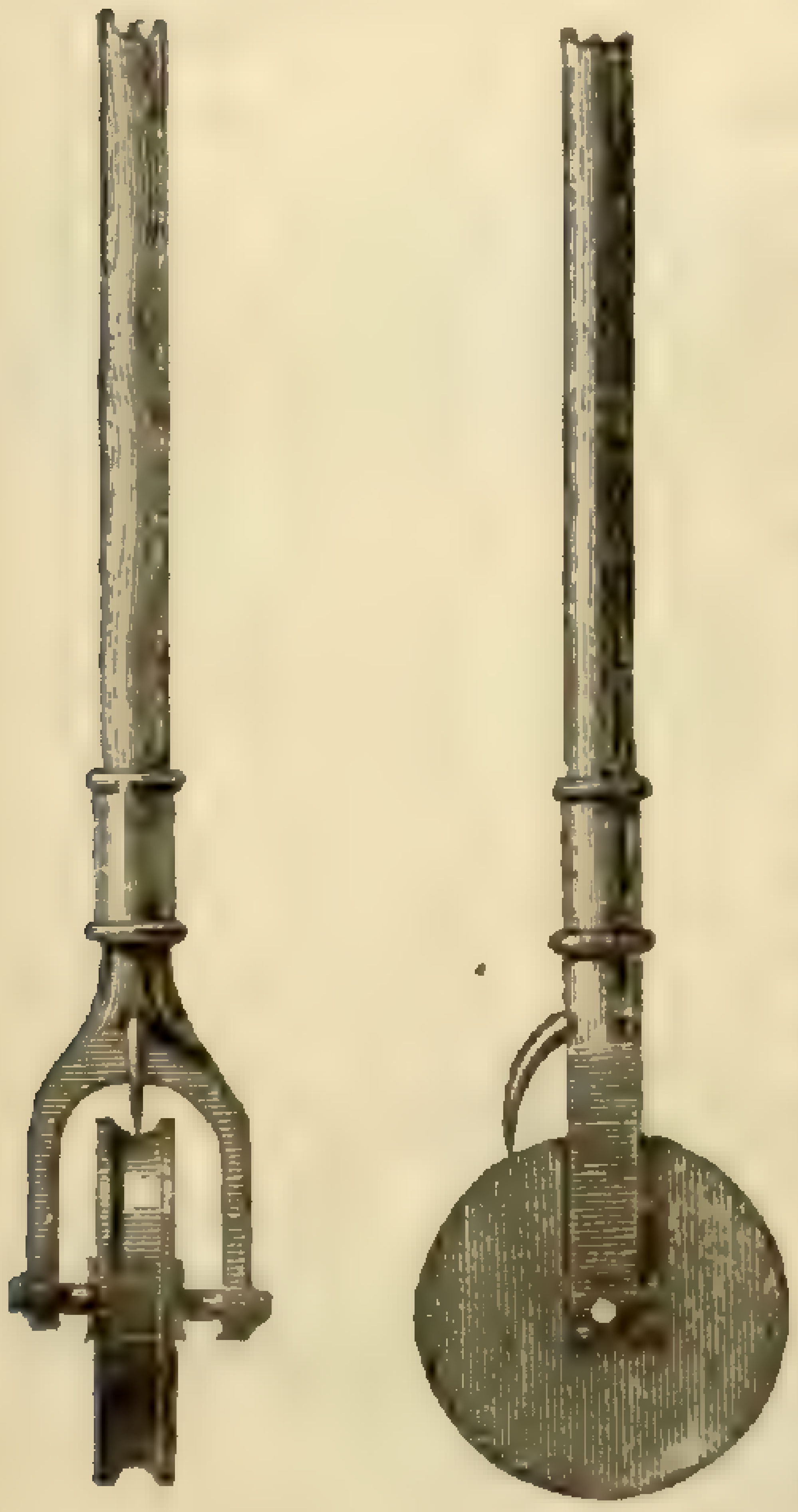
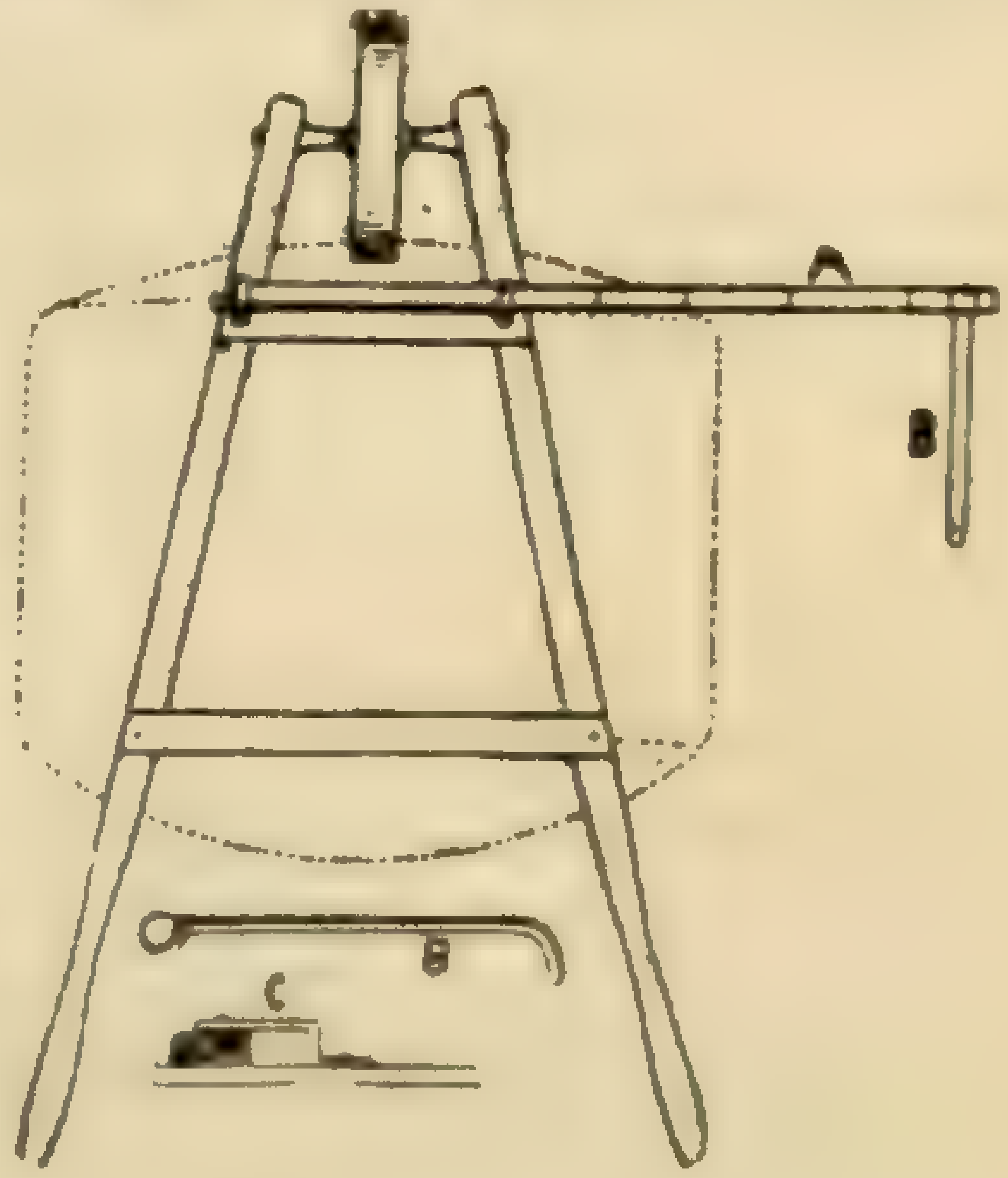


FIG. 8.

BARROW MARKER.—(FIG. 9.) A 2 x 2 in. stick, A, 4 feet long, is attached to a wheelbarrow, with a hoop-iron drag or marker, B, B, hanging from it to follow the last row. C shows the method of securing the stick or bar to the wheelbarrow frame, by a clasp of hoop iron. —*Farm and Home.*



HOME-MADE WEED KILLER.—(FIG. 10.) The weeding-blade is made of an old saw-blade, and fastened to a frame which may be raised or lowered at will. —*R. A. Kummel, in American Gardening, 293.*

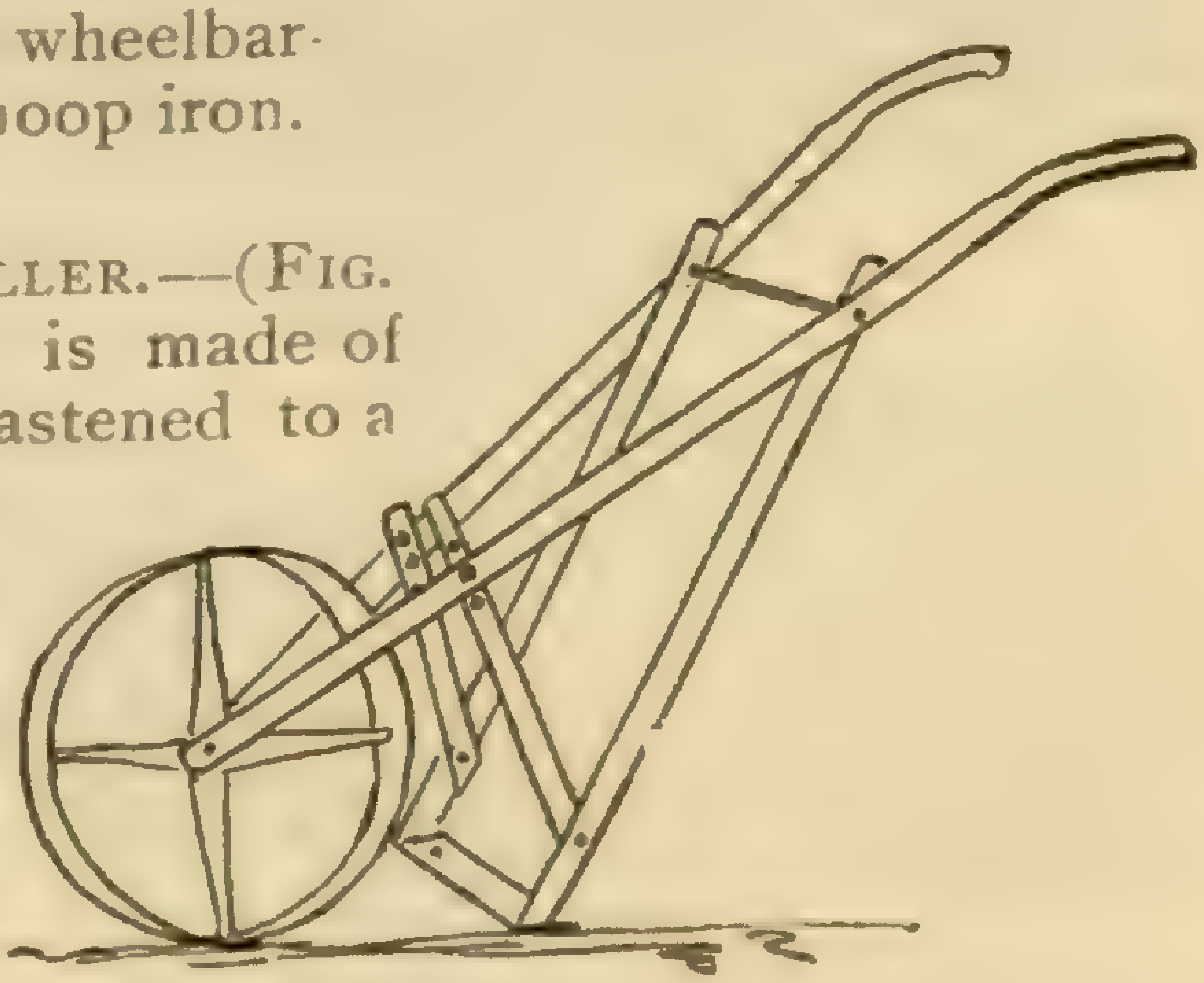


FIG. 10.

WEED KILLER—(FIG. 11.) A patented improvement on Breed's weeder, known as Vreeland's Automatic Weed Exterminator and Smoothing Harrow.—*Rural New-Yorker.*

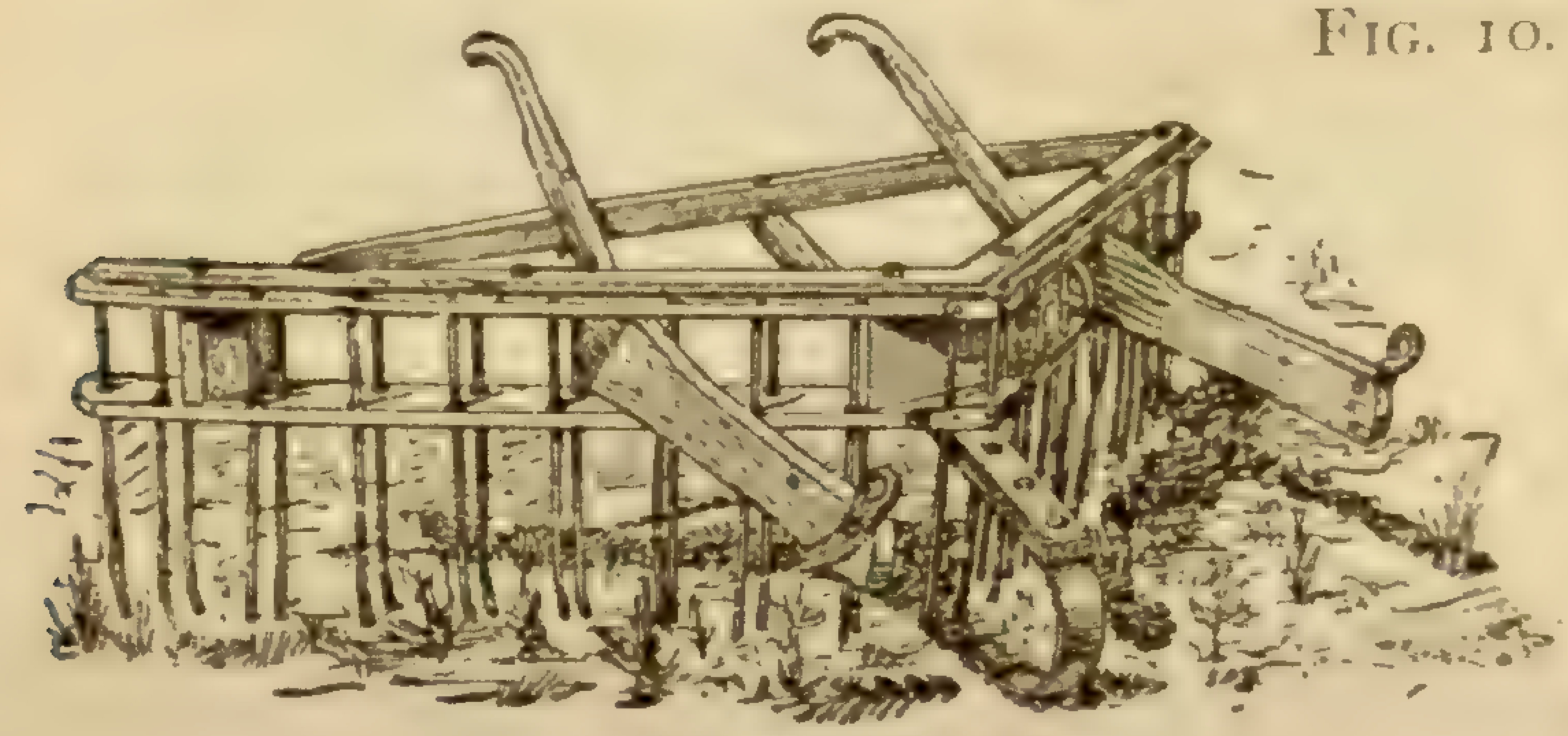


FIG. 11.

Weed Destroying Machine.—A machine invented by Mr. Burgess is designed to uproot weeds and burn them in a furnace. An engine is mounted upon four wheels, and the weeds pass into it by means of an incline. After burning, the ashes pass out upon the soil. The machine is said to be capable of cleaning from four to six acres of land per day. It requires two men to operate it. The engine is from six to eight horse-power.

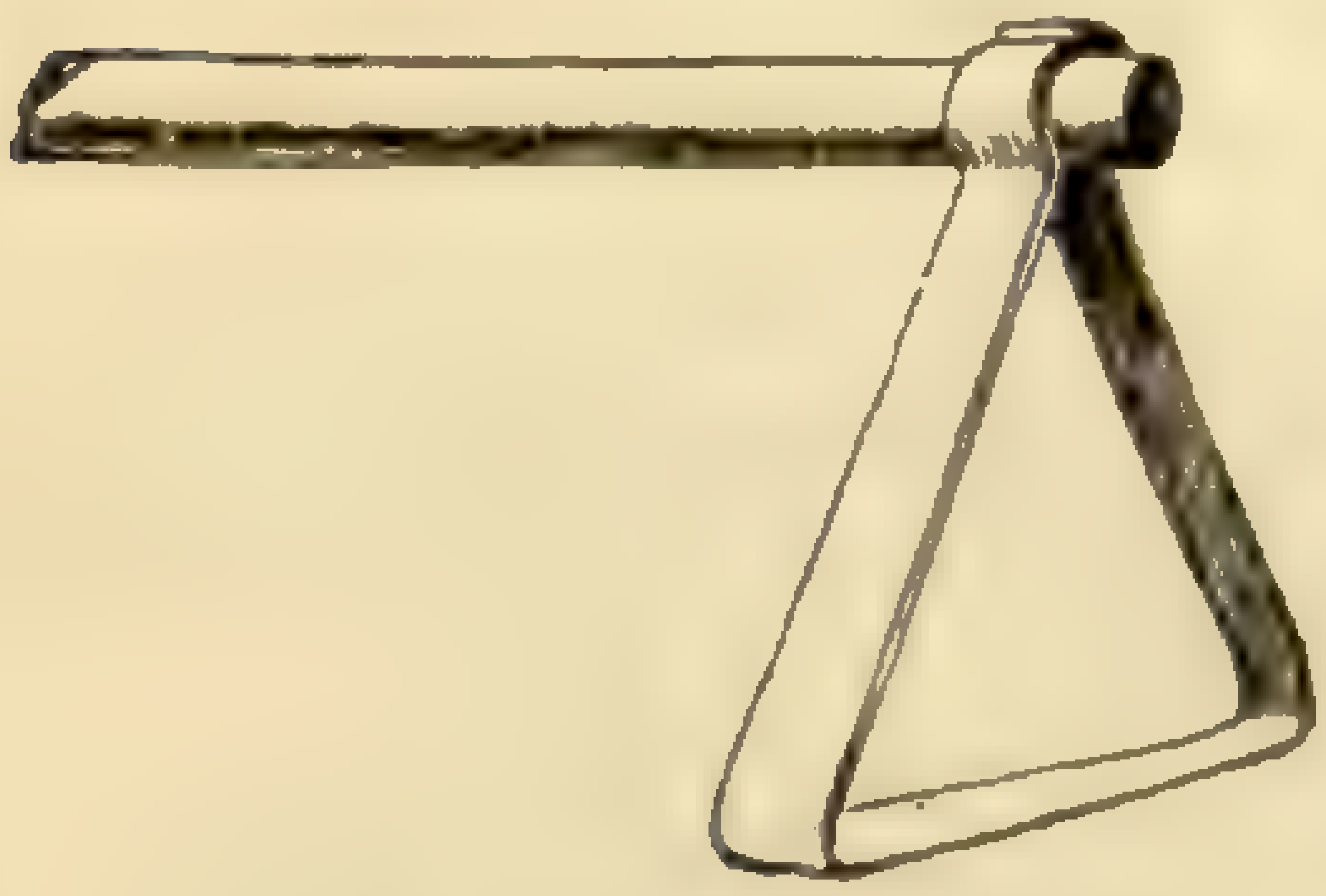


Fig. 12.

Hand Weeder.—(Fig. 12.) One of the simplest yet best tools used in our onion and other beds this season was a hand weeder we made by sawing a broken hoe-handle into eight or ten-inch length, and fastening each piece to the apex of a ¾-inch triangular piece of band-iron, as shown in illustration. The cutting-edges of the weeder were filed sharp.—*L. G., in American Gardening, 104.*

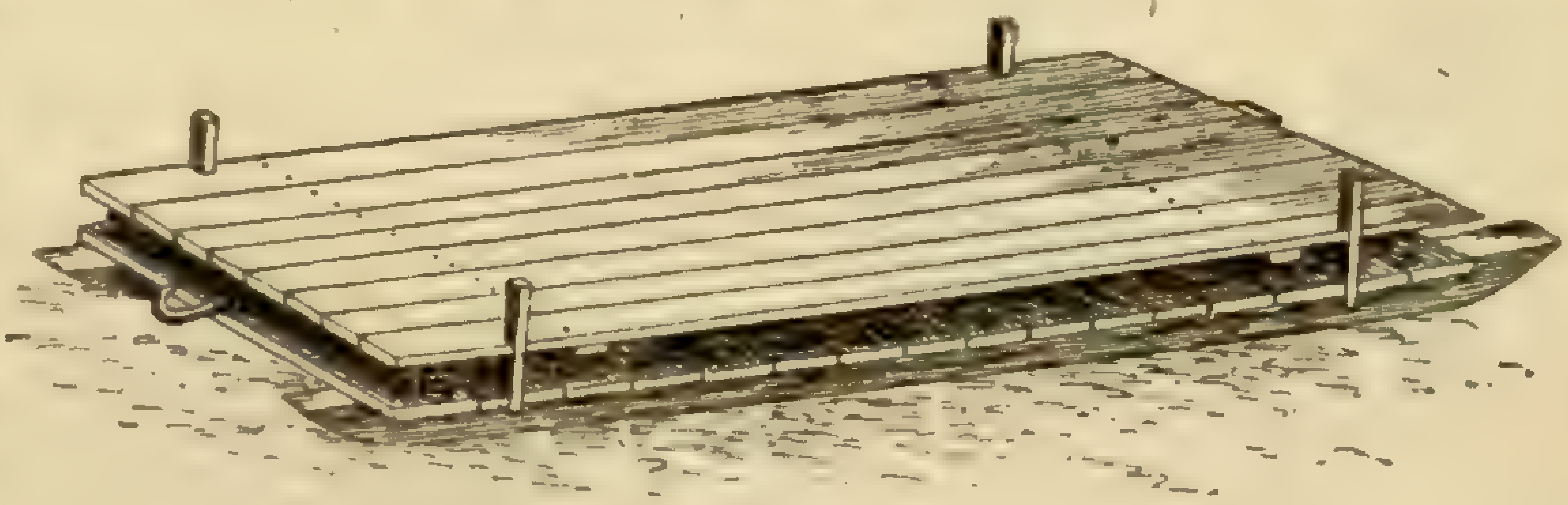


Fig. 13.

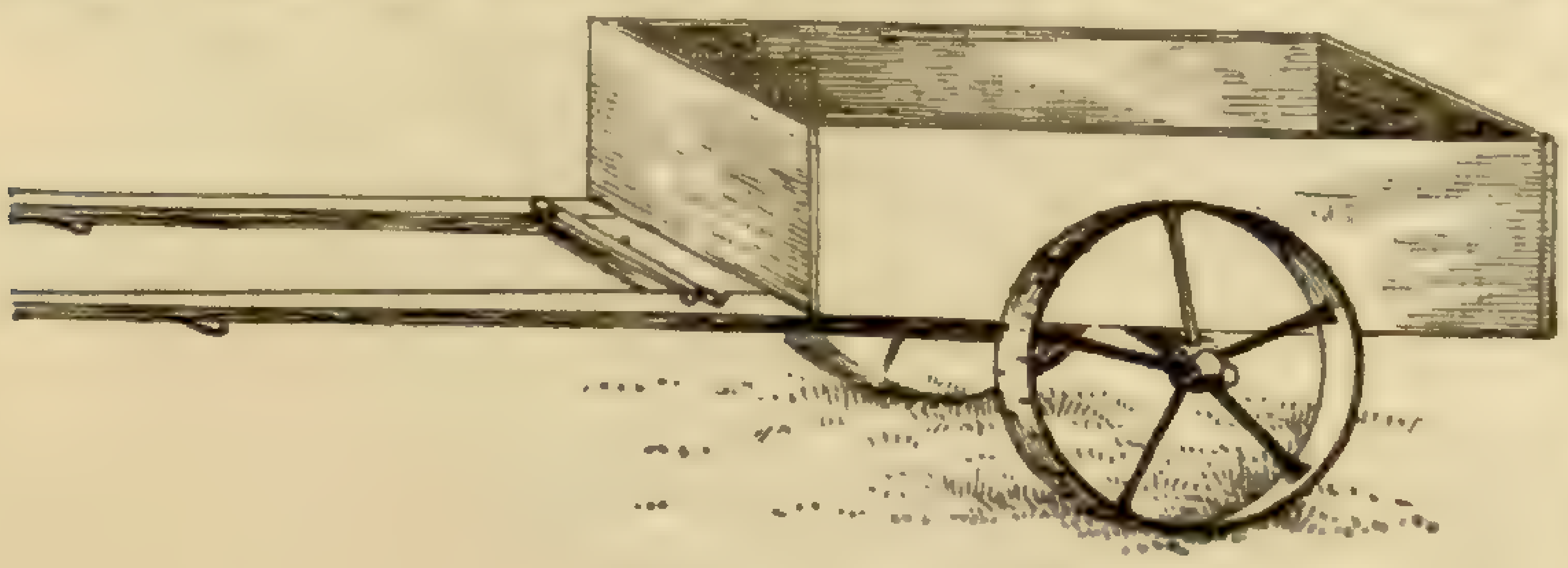


Fig. 14.

Stone Boat for Berry Fields.—(Fig. 13.) A double-ender stone boat, with spiral bed-springs under

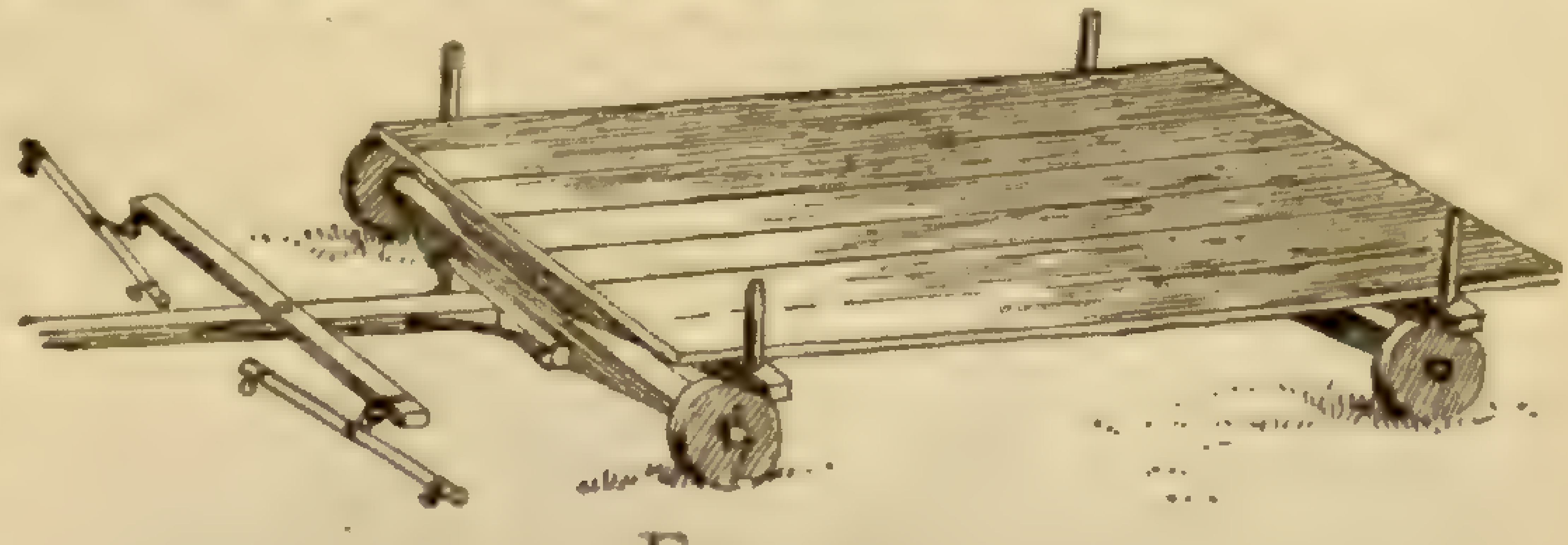


Fig. 15.

the flat form to prevent bruising the fruit.—*L. D. Snook, in American Agriculturist, 177.*

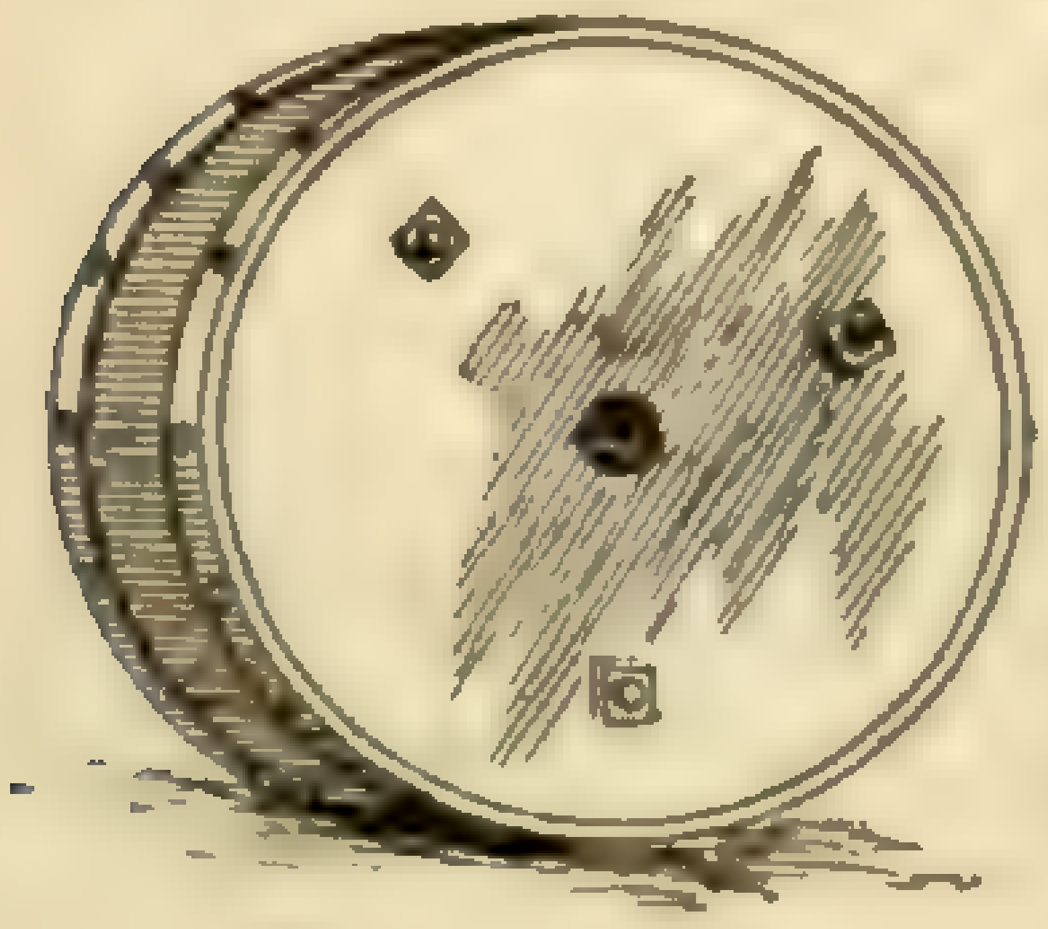


FIG. 16.

FRUIT GROWERS' CARTS.—(Figs. 14, 15 and 16.) Fig 14 shows a convenient cart made from the cast-off wheels and shaft of a mowing machine. Fig. 15 is a low vineyard truck. The wheels are 12 inches in diameter, and are made from 2-inch, hardwood plank bolted together and bound on the edges with hard-iron, as shown in Fig. 16.—*L. D. Snook, in American Agriculturist, 177.*

PROPOSED NEW SPRAYING-MACHINE.—(Fig. 17.) The *Mark Lane Express* proposes the device shown for spraying potato-vines with Bordeaux mixture. Present machines, it says, are not entirely successful, because the spray is not protected from the wind, which blows it to one side, so that frequently some vines are not touched at all, while others are completely drenched. Again, but one side of the vine is sprayed, the other being neglected because it rests on or near the ground. For these reasons a machine is wanted that will deliver the spray *under cover*, so that the wind will not disturb it, and also one that will raise up the vines, and thus permit the spray to reach all sides. The results are thought to be reached in the machine here illustrated. A is a hood or roof which passs *over* the row. The spray is driven out through B B B, *inside* this roof, so

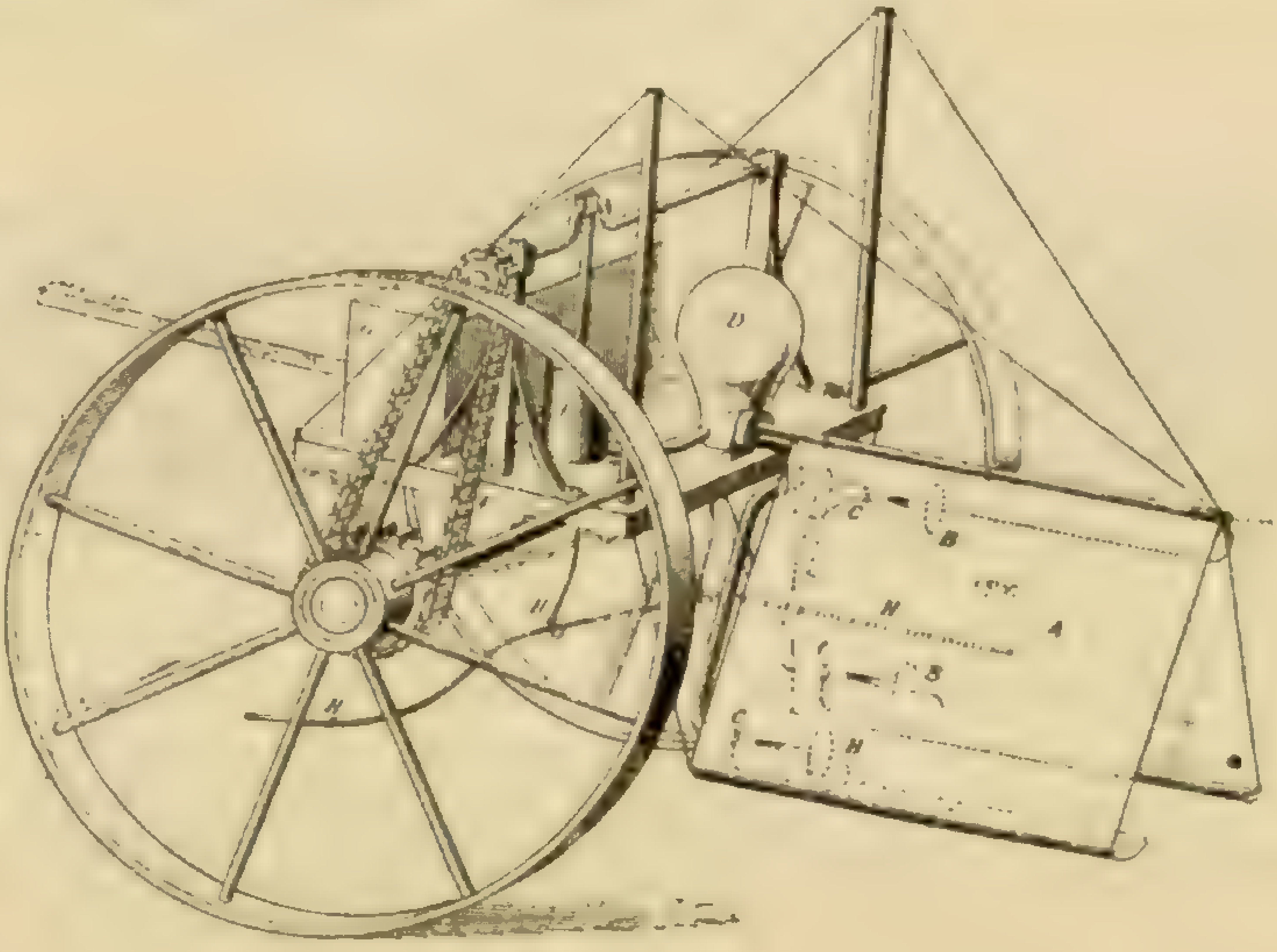


FIG. 17.

that it must fall upon the vines. C C C are nozzles. D is an air-chamber for regulating the stream, making a force-pump. E is the pump, with F a chain for driving it. G is the tank for carrying the mixture. H H are curved rods of iron or wood for elevating and holding up all "down" vines under the roof until the spray has reached them. These rods reach under and lift up the vines, which otherwise would have only their upper sides wet with the mixture.

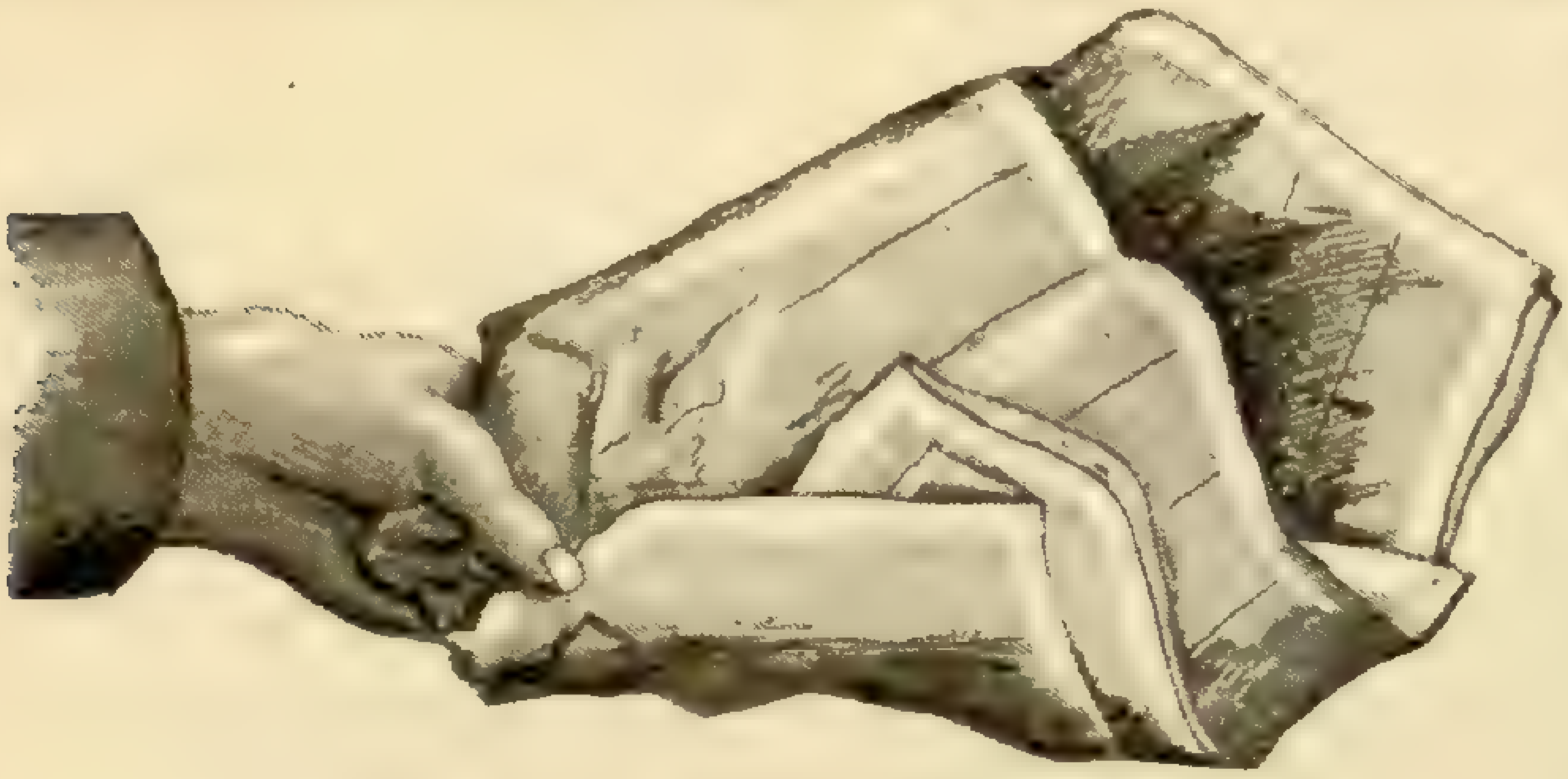


FIG 18.

SIMPLE INSECT-CATCHER.—(Fig. 18.) This device is simply made from a waste newspaper, and held under trees and shrubs when gathering caterpillars from webs or colonies. When the insects are gathered the holder can be folded in from the end, and the insects destroyed by treading on them. —*American Gardening, 688.*

WATER RESERVOIR.—(Fig. 19.) This consists of a series of barrels connected at their tops by means of a tube, as shown. When the first barrel is full, the overflow runs into the second, etc., until all are full.—*Aug. W. de Vries, in Der Praktische Ratgeber im Obst-und Gartenbau, 84.*

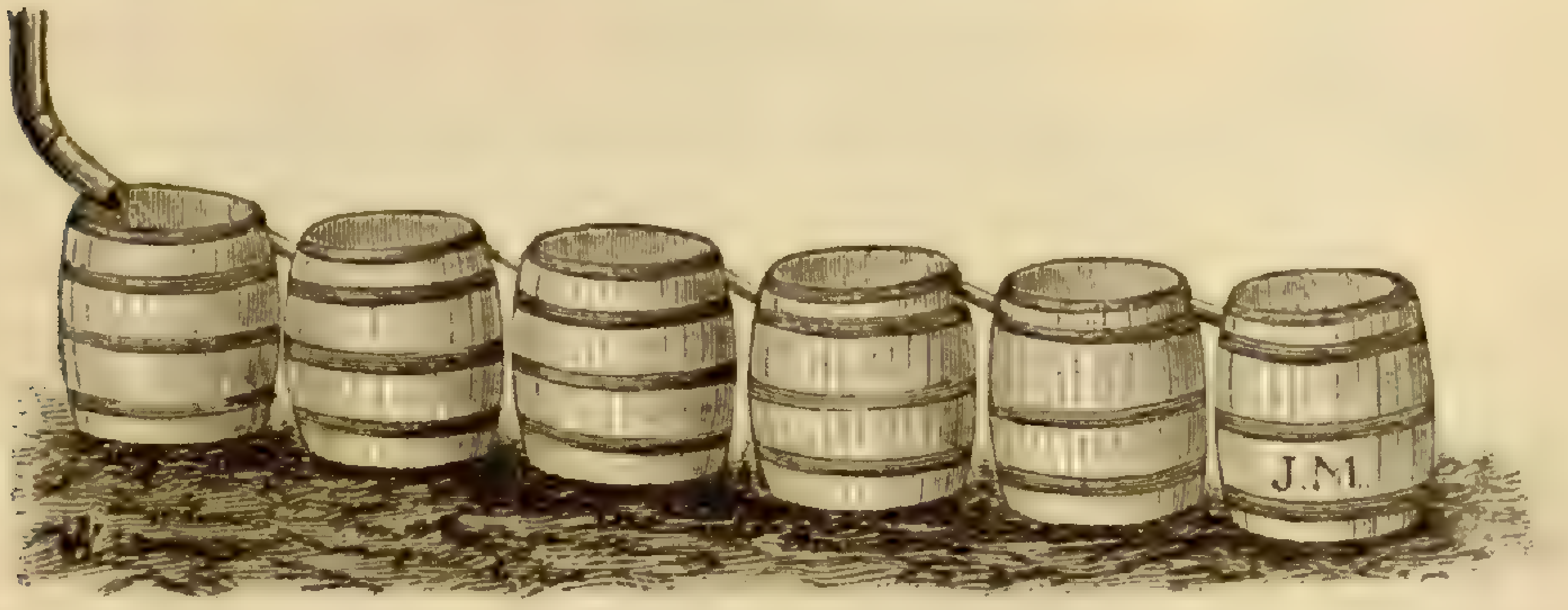


FIG. 19.

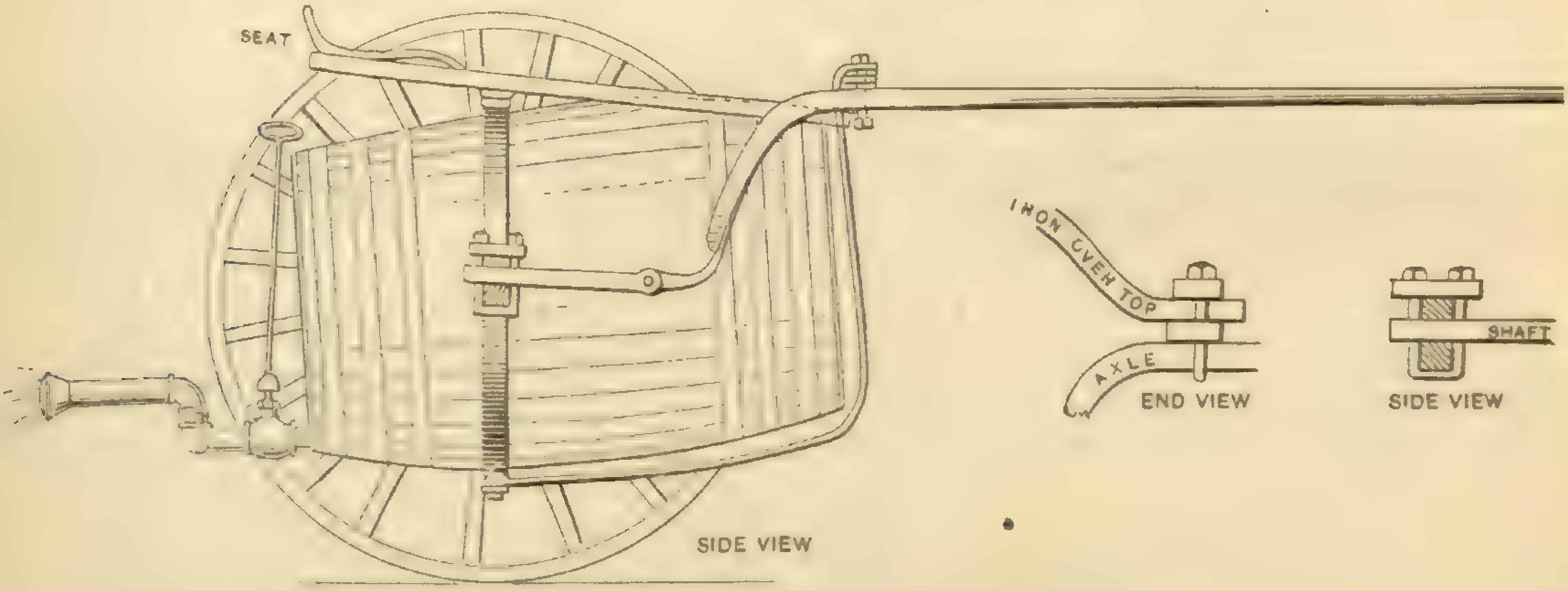


FIG. 20.

A WATER-CART AND SPRINKLER.—(Figs. 20, 21 and 22.) The wheels of an old wheat-drill will be serviceable for this cart, or old wagon-wheels may be used. I bolted old 1½-inch tire upon the axle in the middle of the bent part, then when past the end of the barrel, I bent it straight up till it came a little above the barrel, then made a short bend at right angles to take the bolt of the singletree of the shafts. I then bolted short pieces on each side to lengthen the shafts, put the shafts on, bent the iron up in front on top of singletree and put the bolt through. Next I made a staple to drive into the top of the barrel over the iron which comes up in front, and bent a piece of iron over the top of the barrel. This holds the barrel so that it cannot rock, and also comes handy if you want to put a seat on. A sprinkler to sprinkle potatoes can be put on at small cost, and if the wheels are too narrow to span two rows, a pole can easily be put on, with extra nozzle in the middle behind the barrel, so that three rows can be sprinkled at once. The sprinkling attachment must be bought at a plumber's. It takes

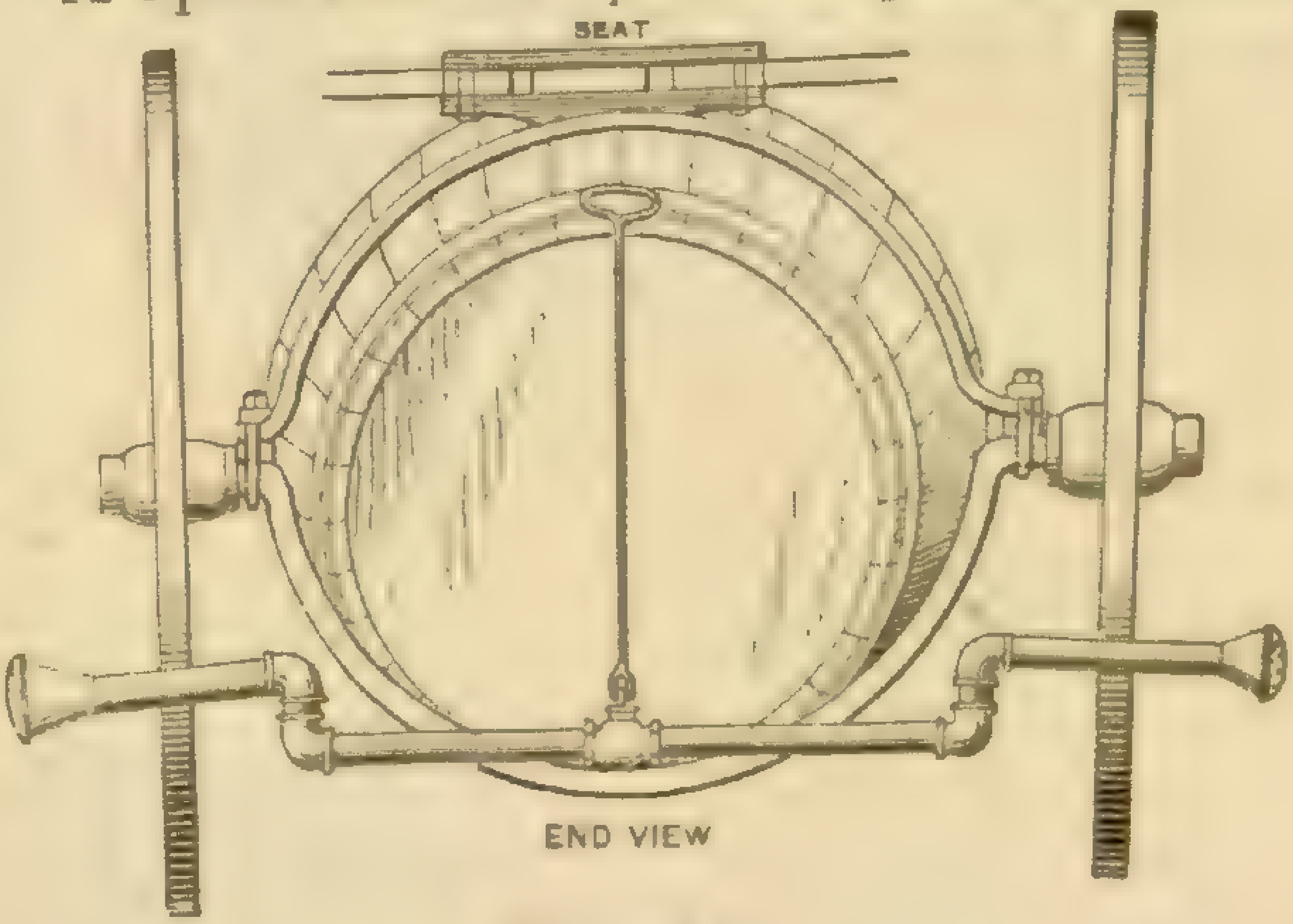


FIG. 21.

one stop-cock, one T, four pieces of pipe about a foot long, four nipples, and a sprinkler for each pipe used. The cross-bar of the shafts will need to be shortened to make it fit the axle. The figures 20, 21 and 22, herewith, illustrate this sprinkler.—*F. E. Pogue, in American Gardening, 557.*

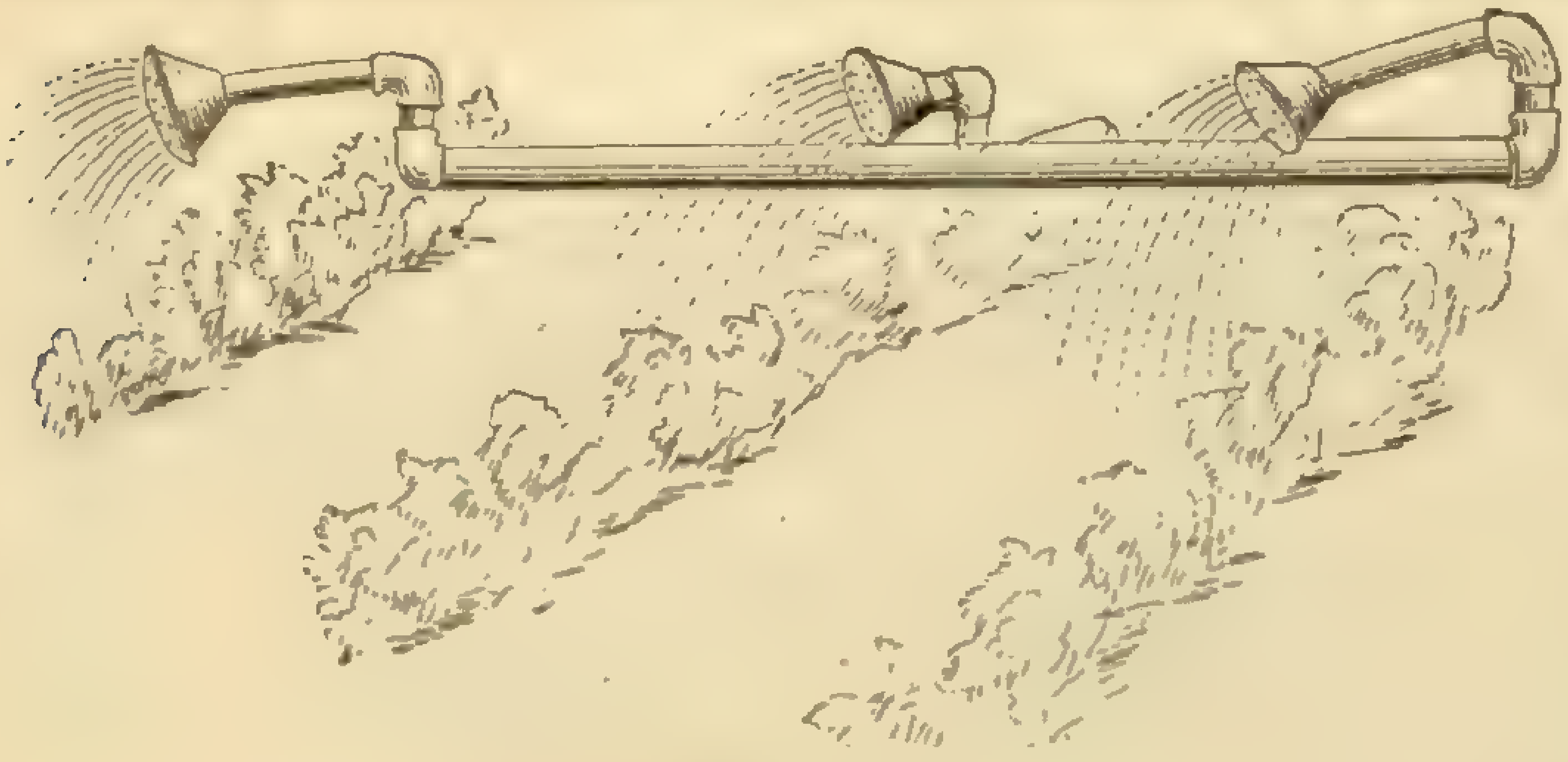


FIG. 22.

SPADE FOR SETTING GRAPES.—(Fig. 23.) The spade is forced into the ground when open (*b*). Before withdrawing, the lever should be pressed against the handle in order to keep the dirt from falling through, as shown in *a.—Maurice Lacaze in Journal d'Agriculture Pratique* (*Revue Horticole, 184.*)

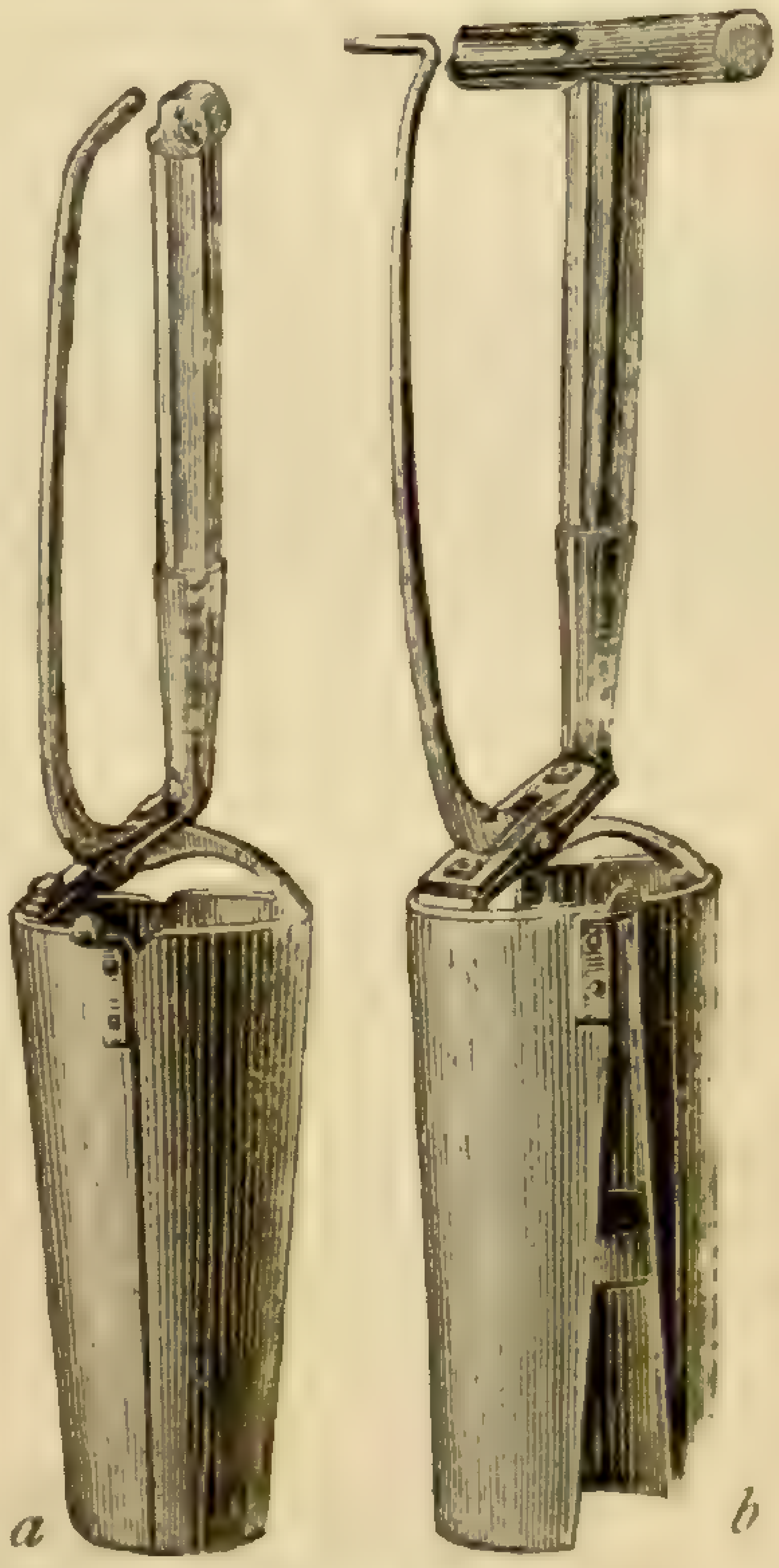


FIG. 23.

HOOP-IRON HOE.—(Fig. 24.) The illustration shows a serviceable hoe, which any one with mechanical skill can easily make. On an old hoe-handle attach a piece of good strong hoop-iron, firmly bolting it. The cutting edges should be filed sharp.—*American Gardening, 616.*

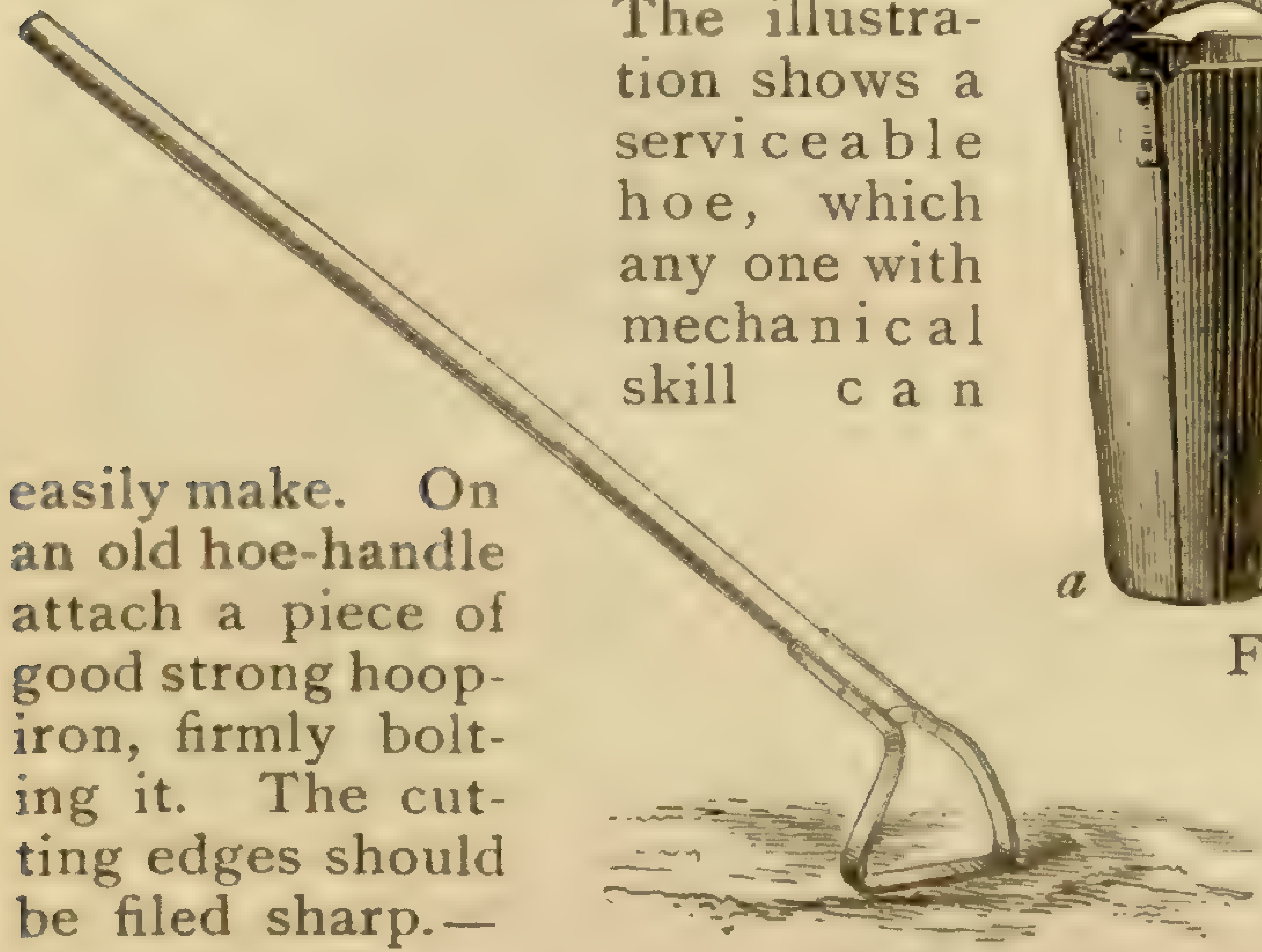


FIG. 24.

TOOL FOR RASPBERRY-GROWERS.—(Fig. 25.) An old manure-fork with broken tines can be easily transformed into a useful implement for cutting suckers and weeds out of the raspberry patch. Simply rivet a piece of an old bush scythe, say a foot long, on the outer tines, in the way shown in the illustration.—*American Gardening, 165.*

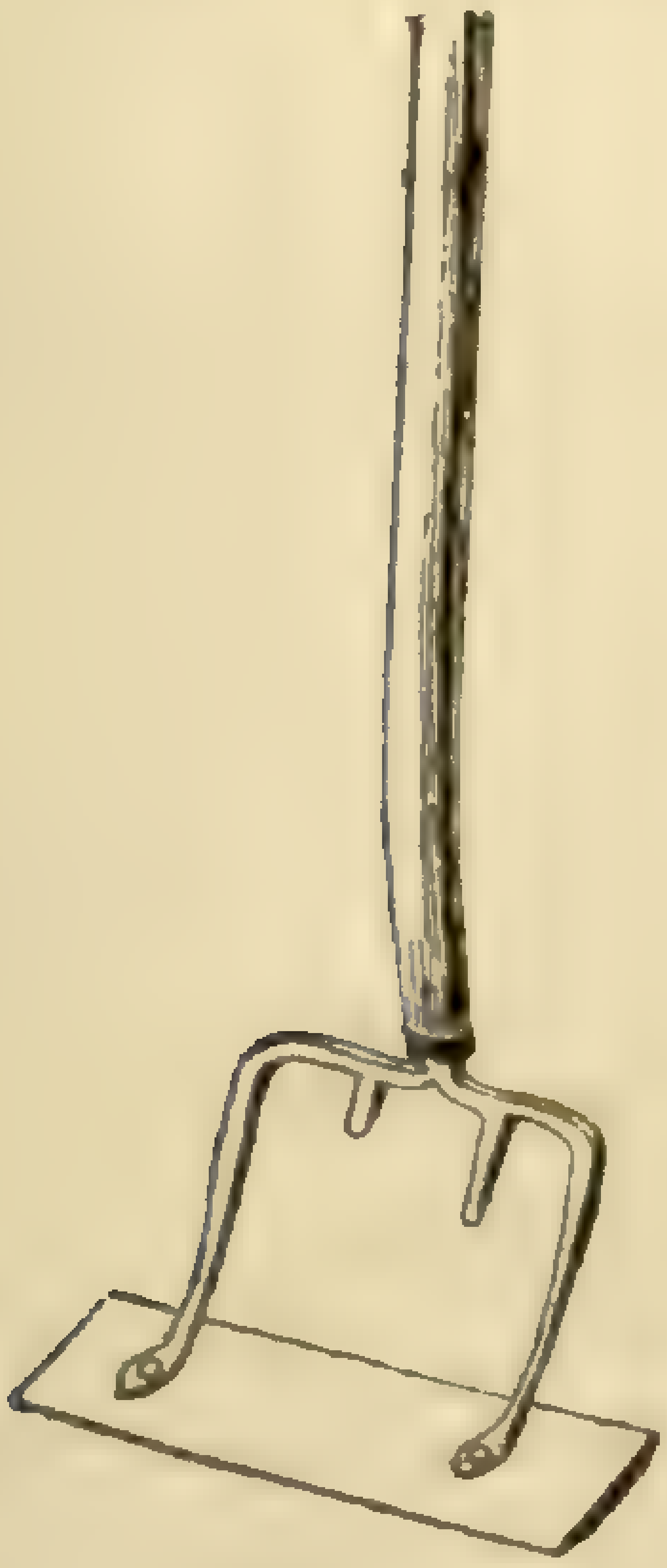


FIG. 25.

HOME-MADE TOOLS.—(Fig. 26.) The illustrations show tools made from a cast off hand saw. At the left is shown a strawberry-path trimmer. The right picture shows a strawberry pruner. The central figure is a sod axe.—*J. Hayes, in American Gardening, 226.*

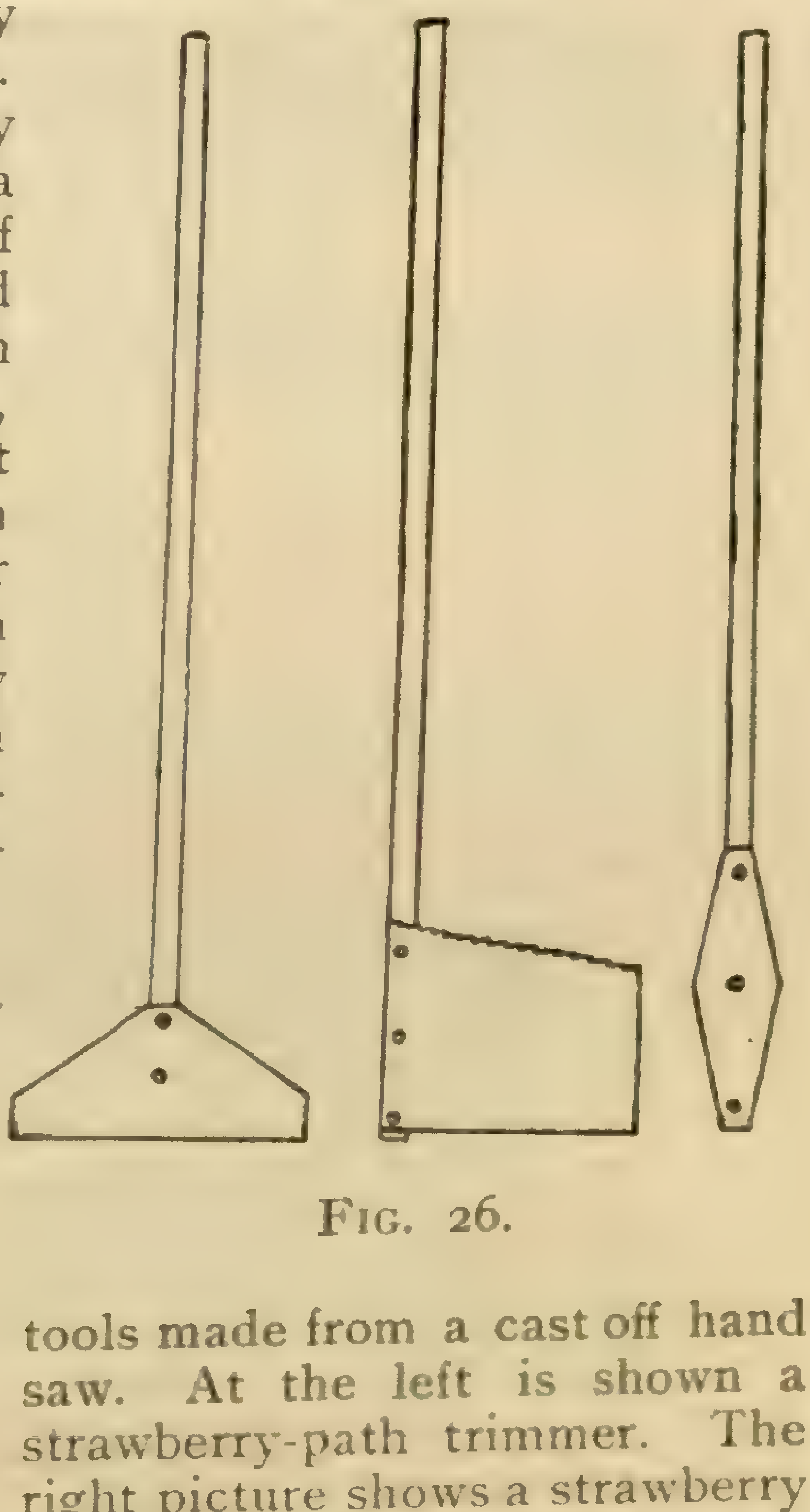


FIG. 26.

BERRY SPUDS.—(Fig. 27.) The cut shows two good spuds for cleaning raspberry, blackberry, and other small fruit plantations.—*A. E. Barnes, in American Gardening, 741.*

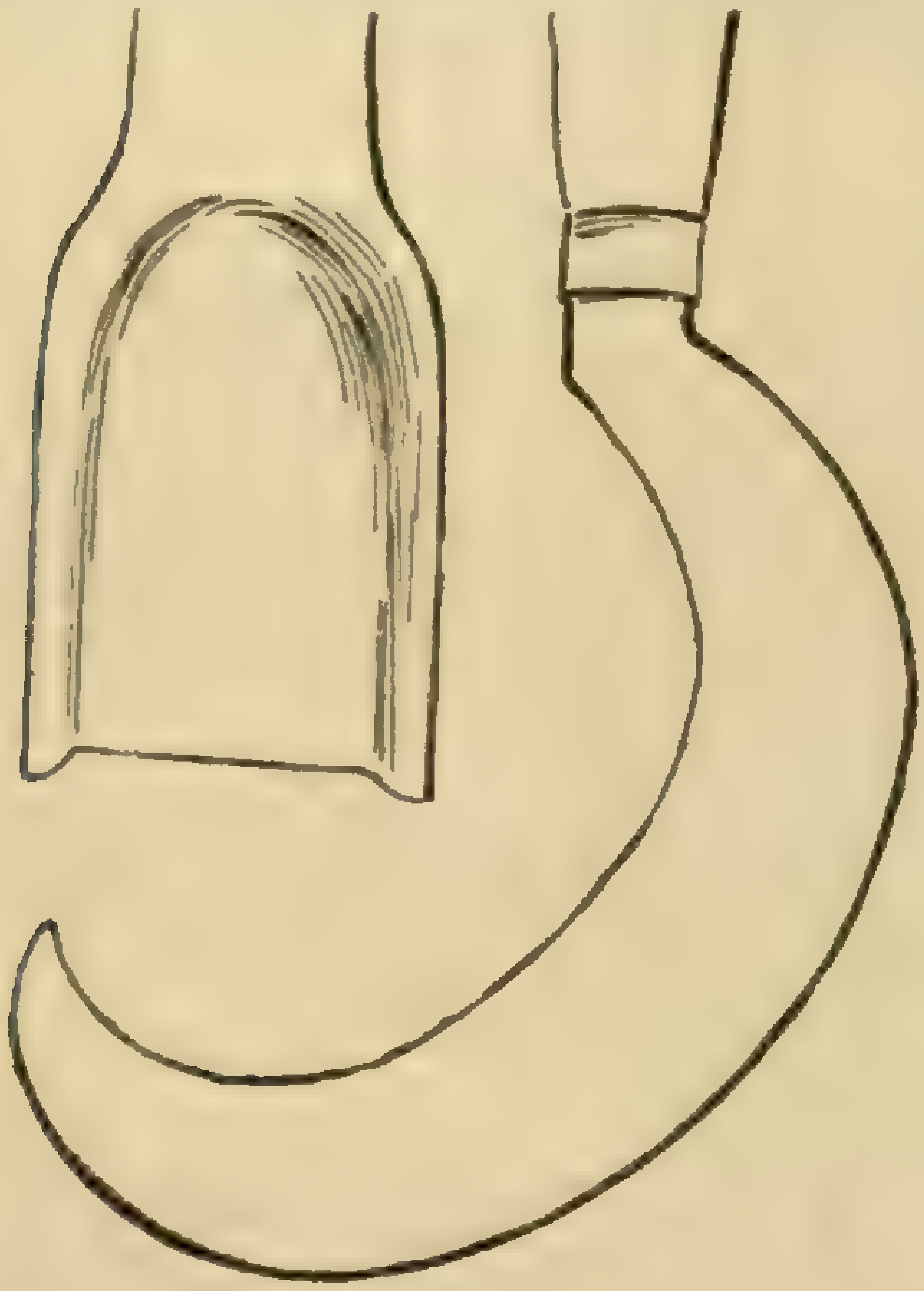


FIG. 27.

Home-Made Dibber.—(Fig. 28.) The dibber is made of thin spring steel. It is about 7½ inches long, and 1¾ inches wide at the widest part. The handle may be like that of a chisel, or shorter and cylindrical, as large as the hand can conveniently grasp. It should be finished on the emery wheel.—*Carl H. Potter, in American Gardening, 616.*

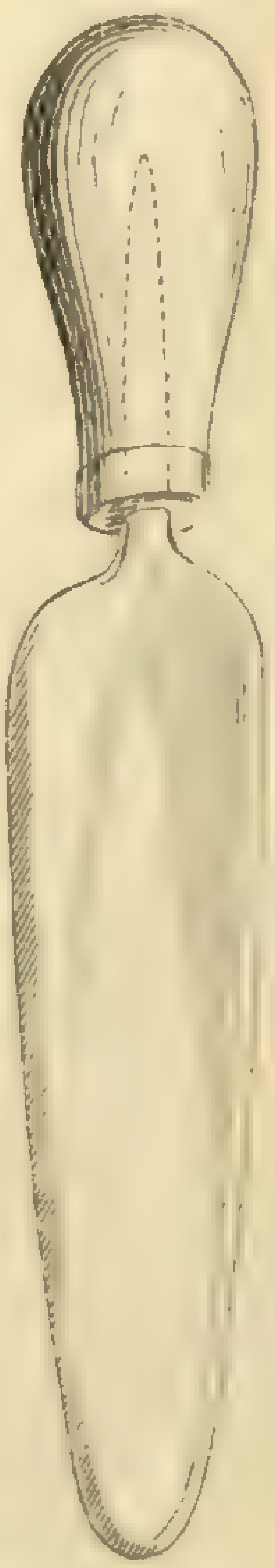


Fig. 28.

Home-Made Sod-Cutter.—(Fig. 29.) The device is simple, and made sufficiently plain by the illustration. The cutting part consists of an old saw-blade, the back of which should be kept sharp. Sods cut with this tool are of even thickness and width, and perfectly square at the sides, so that they fit closely and tightly together.—*American Gardening, 492.*

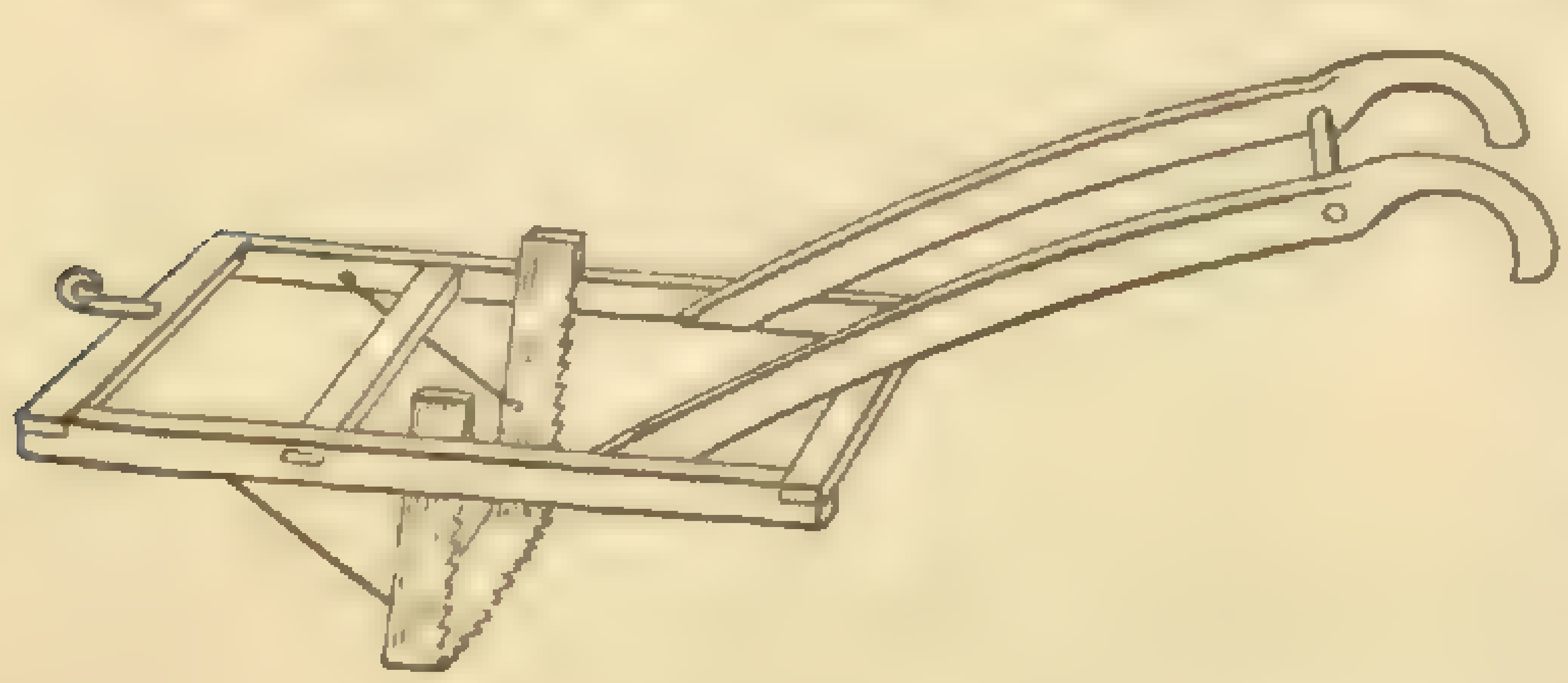


Fig. 29.

Removing Large Plants.—(Fig. 30.) J. M. Samuels, chief of the Department of Horticulture of the World's Fair, gives the following directions for the construction of sectional boxes and the removal of large specimen plants to be used for exhibition purposes. The box represented is the one most commonly used for good-sized specimens, but the dimensions

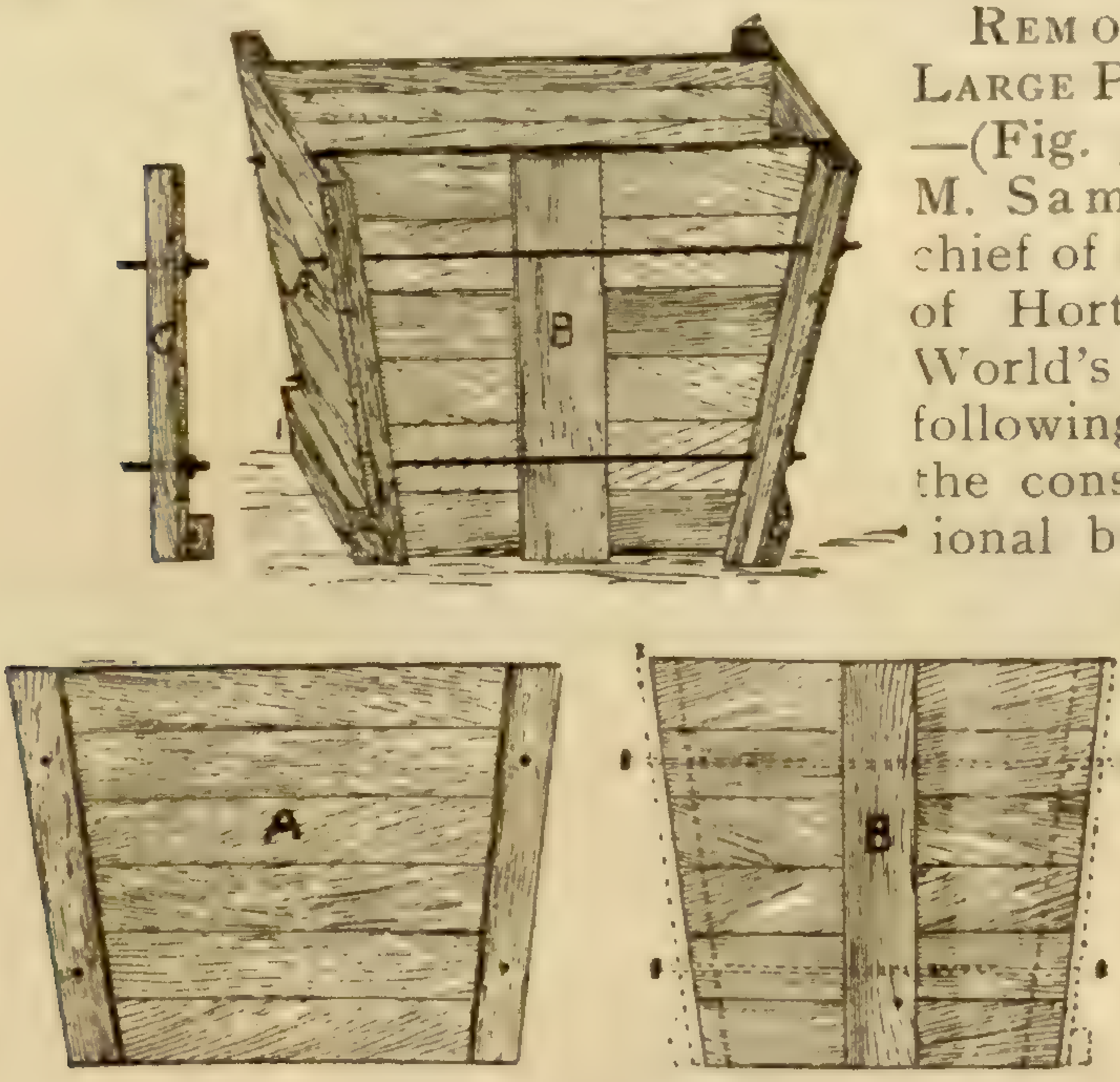
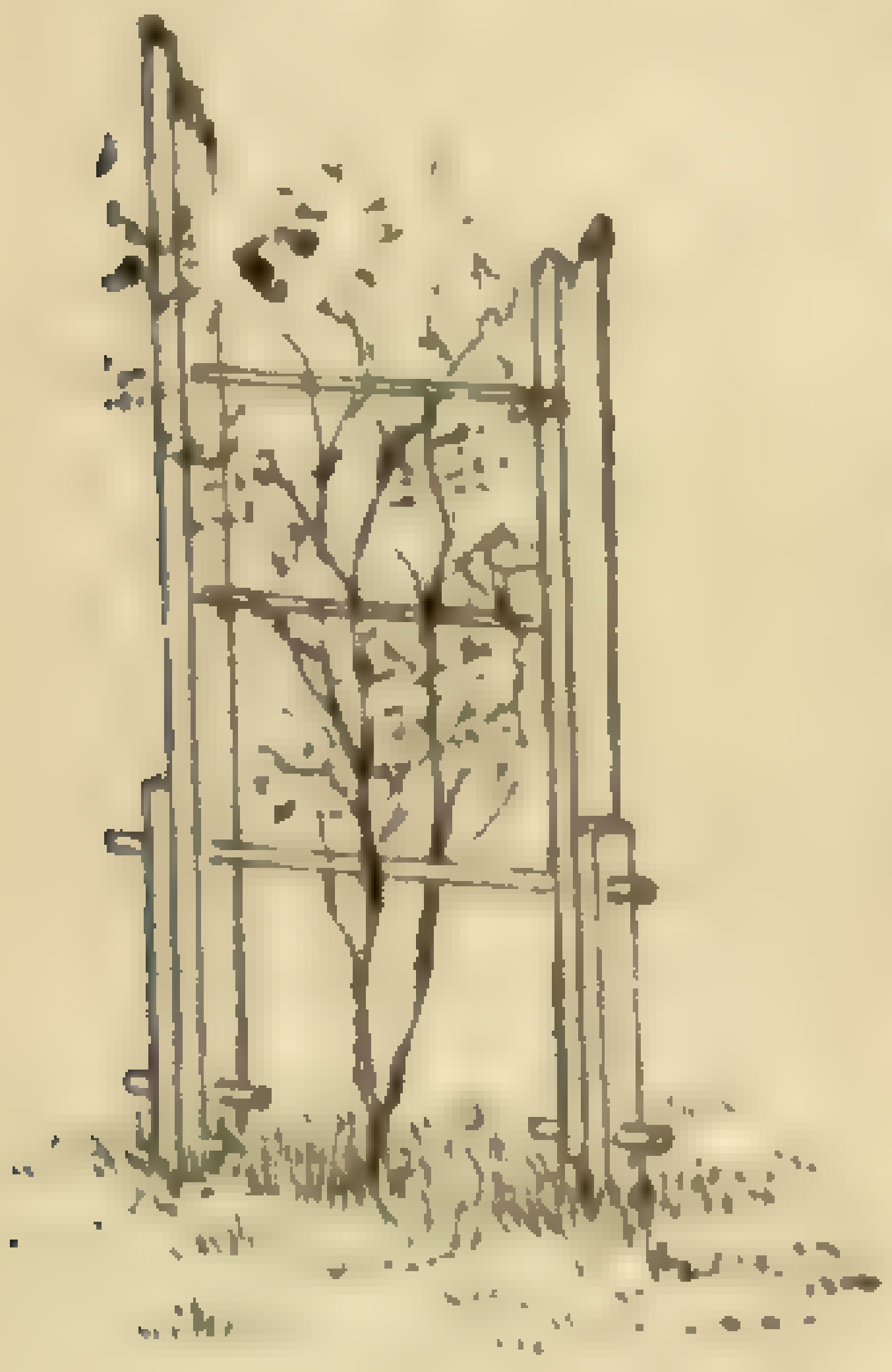


Fig. 30.

must necessarily vary according the size of the plant to be moved. The box is made in four sections, and for one of the following description 1½-inch boards should be used. A shows the inside of two opposite sections, 4 feet wide at top, 3 feet at bottom and 3 feet deep. Scantlings 2x4 are nailed to each end, through which are bored holes to correspond with the size of the iron rods to be used. B gives the outside view of the other two sections, 3 feet 4 inches wide at top, 2 feet 4 inches at bottom and 3 feet deep. A strip 1x6 is nailed across the center to strengthen them. C gives an end view of section A, showing the position of the iron rods, and a 2x4-inch strip on the outside, to which to nail the bottom of the box. Prepare to remove the specimen by carefully digging around it with a sharp spade, in such a manner that the sides of the adhering earth will conform to the shape of the box to be used. Do not attempt to remove the specimen before fixing the box permanently. This should be done by first placing the sections A on opposite sides of the ball, passing the rods through the holes already bored in the ends of each section to hold them in position; then drop the two sections B in place on the inside of the rods, and screw up the nuts sufficiently to secure the earth. If any soil has broken away from the outside of the ball, fill in carefully with fine soil and crowd down tightly with a pointed stick.



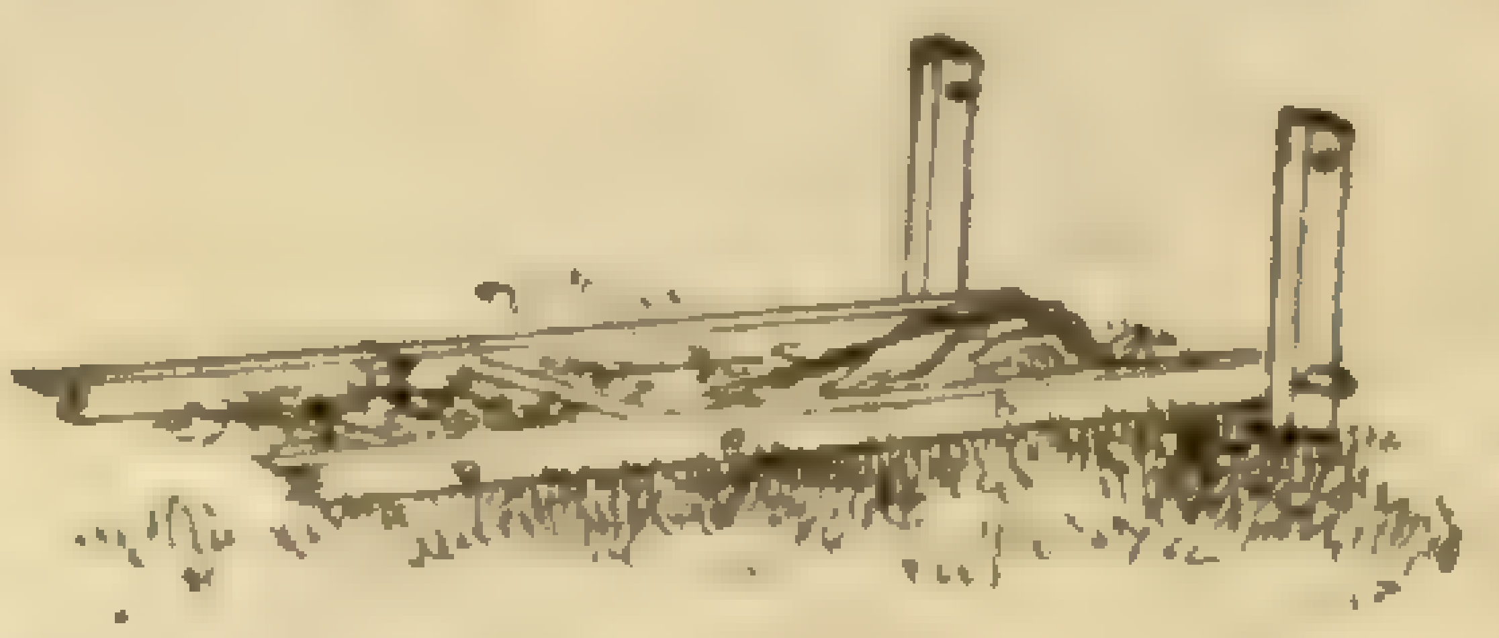


FIG. 31.

FOLDING TRELLIS.—(Fig. 31.) Two stakes are driven firmly into the ground, projecting about a foot. Two pins near the ground act as hinges or pivots, and the first bar or round holds the trellis in place When this bar is removed, the trellis can be laid down, to afford the plant winter protection.—*American Agriculturist, 363.*

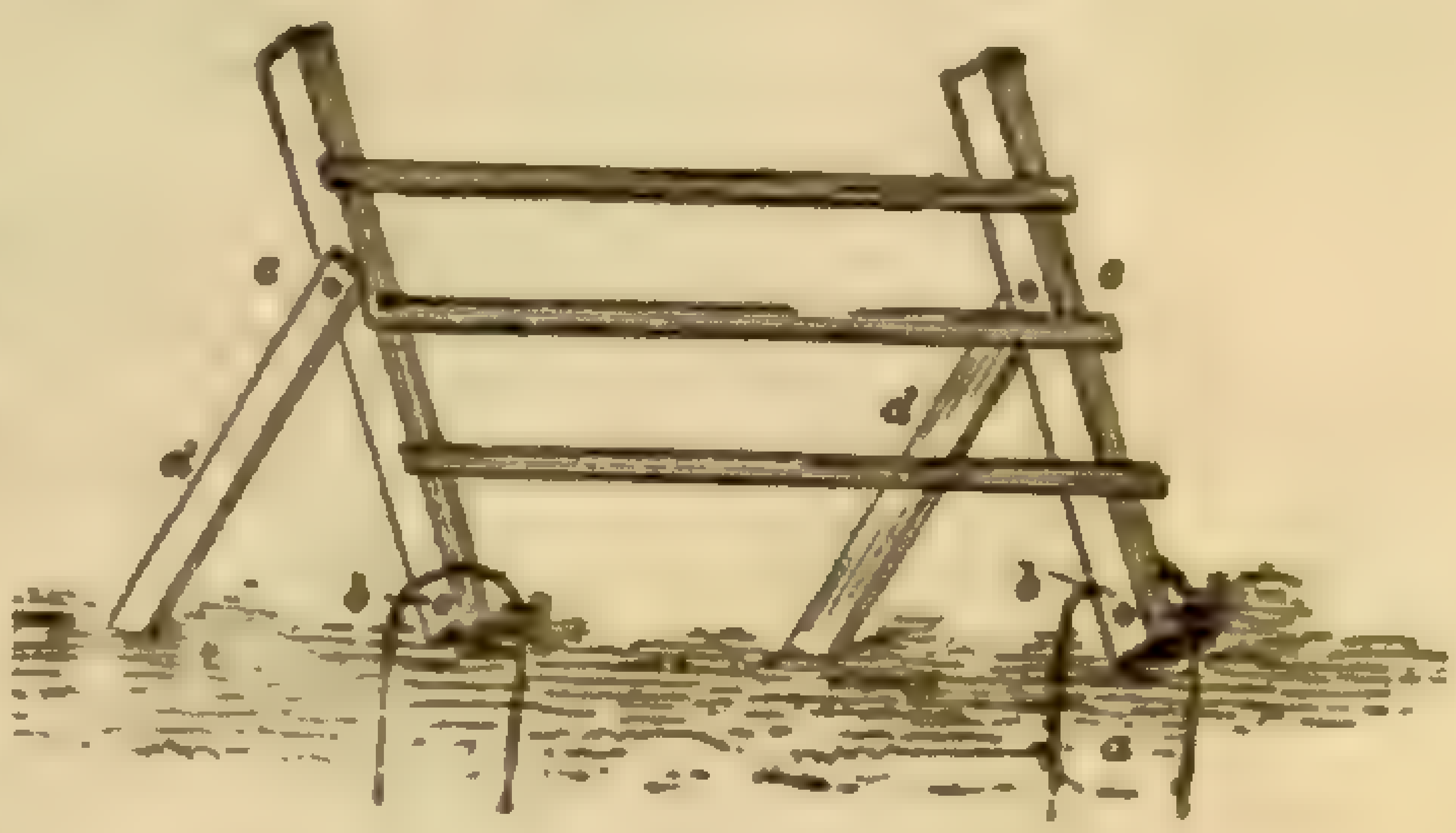


FIG. 32.

Trellis for Tender Grapes.—(Fig. 32.) *A a* are posts set in the ground with enough space above to receive the bolts at *b b*. The props or braces *d d* are also bolted to the trellis at *c c*. In case it is desired to have the trellis stand upright, two more braces can be attached at *c c*.—*Exchange.*

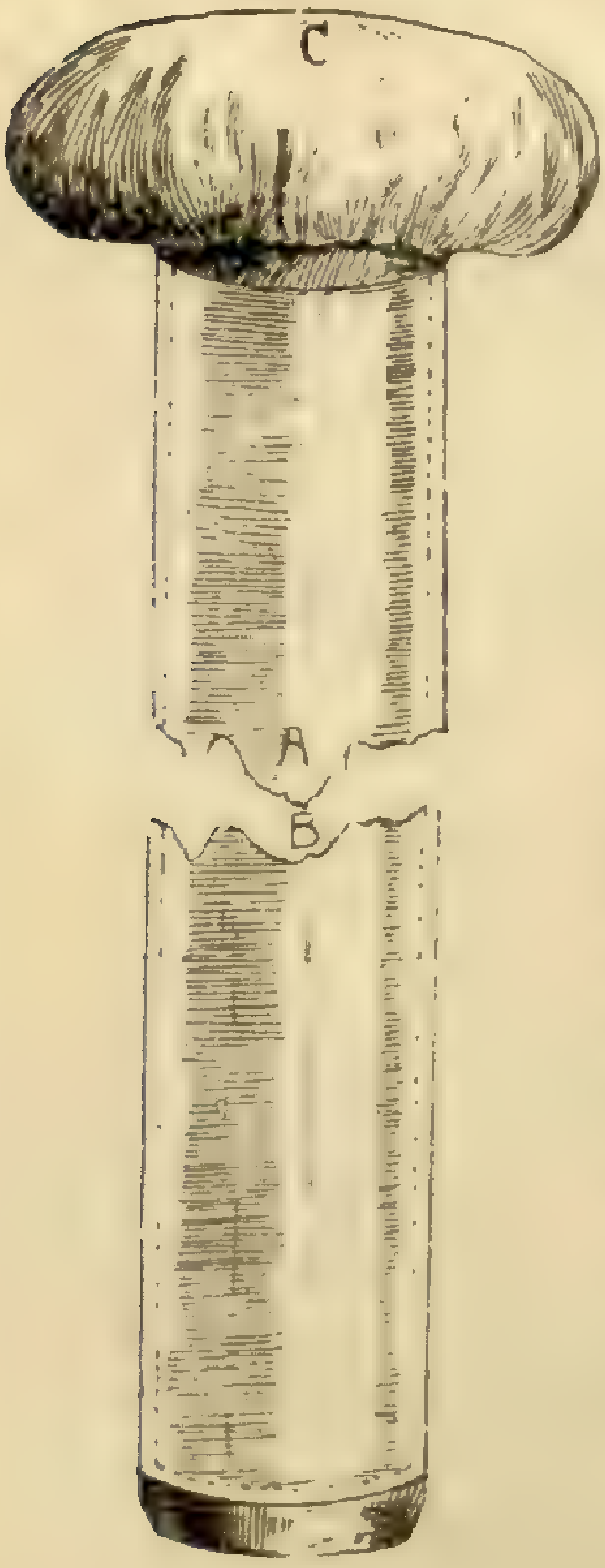


Fig. 33.

Bulb Planter. (Fig. 33. The device is a brass or iron cylinder or tube about an inch in diameter. Inside this works a wooden rod—shown by dotted lines—and which has a round top, C. The rod is removed and the cylinder pressed into the ground the required depth, being taken out with a core of soil. The bulb is dropped in, and the rod is used to press the soil out of the tube.—*Hugh C. McLean, in American Gardening, 741.*

Potato Seed Cutter.—(Fig. 34.) The Aspinwall potato-seed cutter, patented.

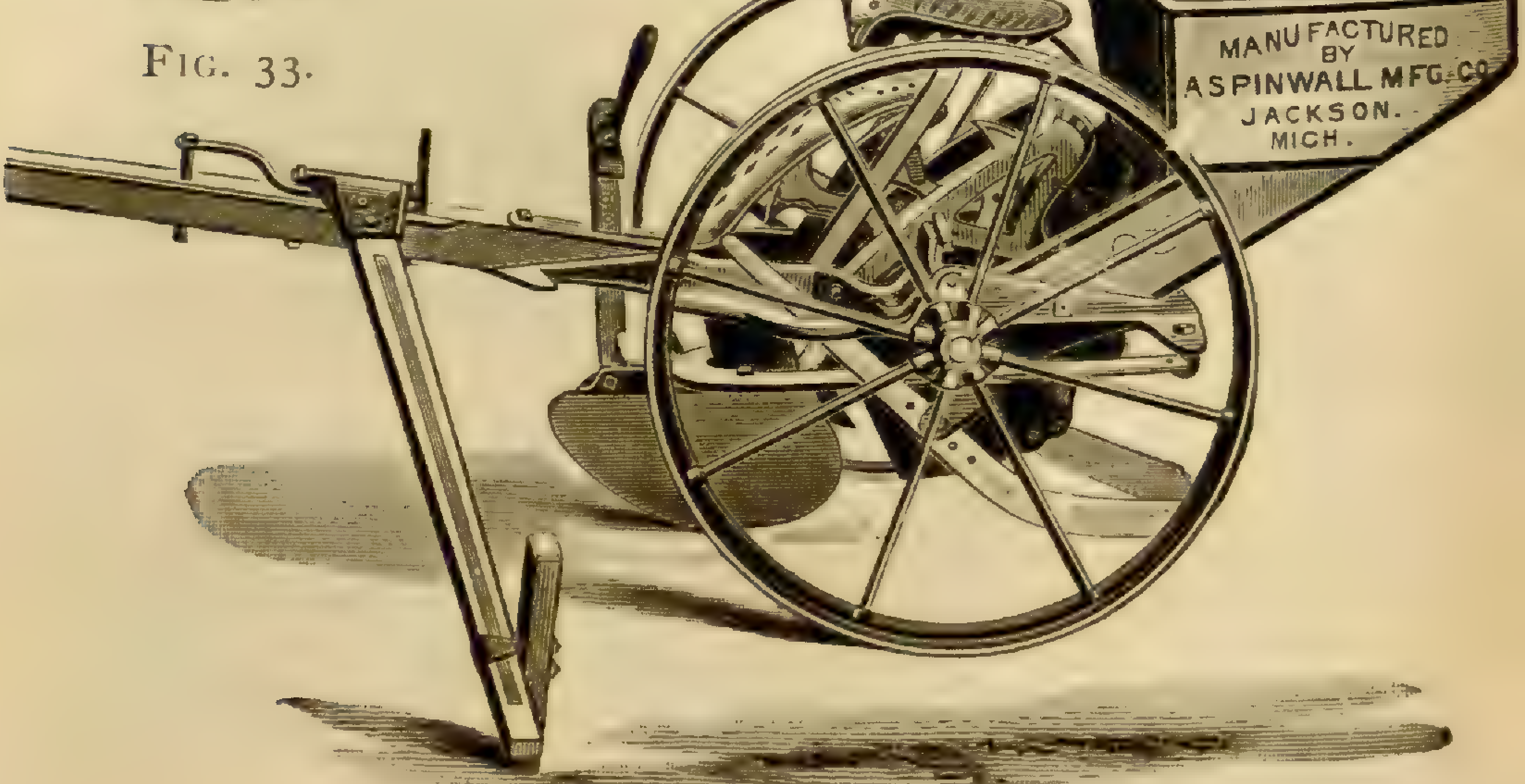


Fig. 34.

PRUNING SHEARS.—(Fig. 35.) The large blade is not fastened tightly to the handle. It is attached by means of a pin, which allows it to yield to pressure; consequently the cut made by the instrument is very smooth as the blade is gradually drawn against the wood and is not forced directly through it.—*Bottner, in Der Praktische Ratgeber in Obst-und Gartenbau, 157.*

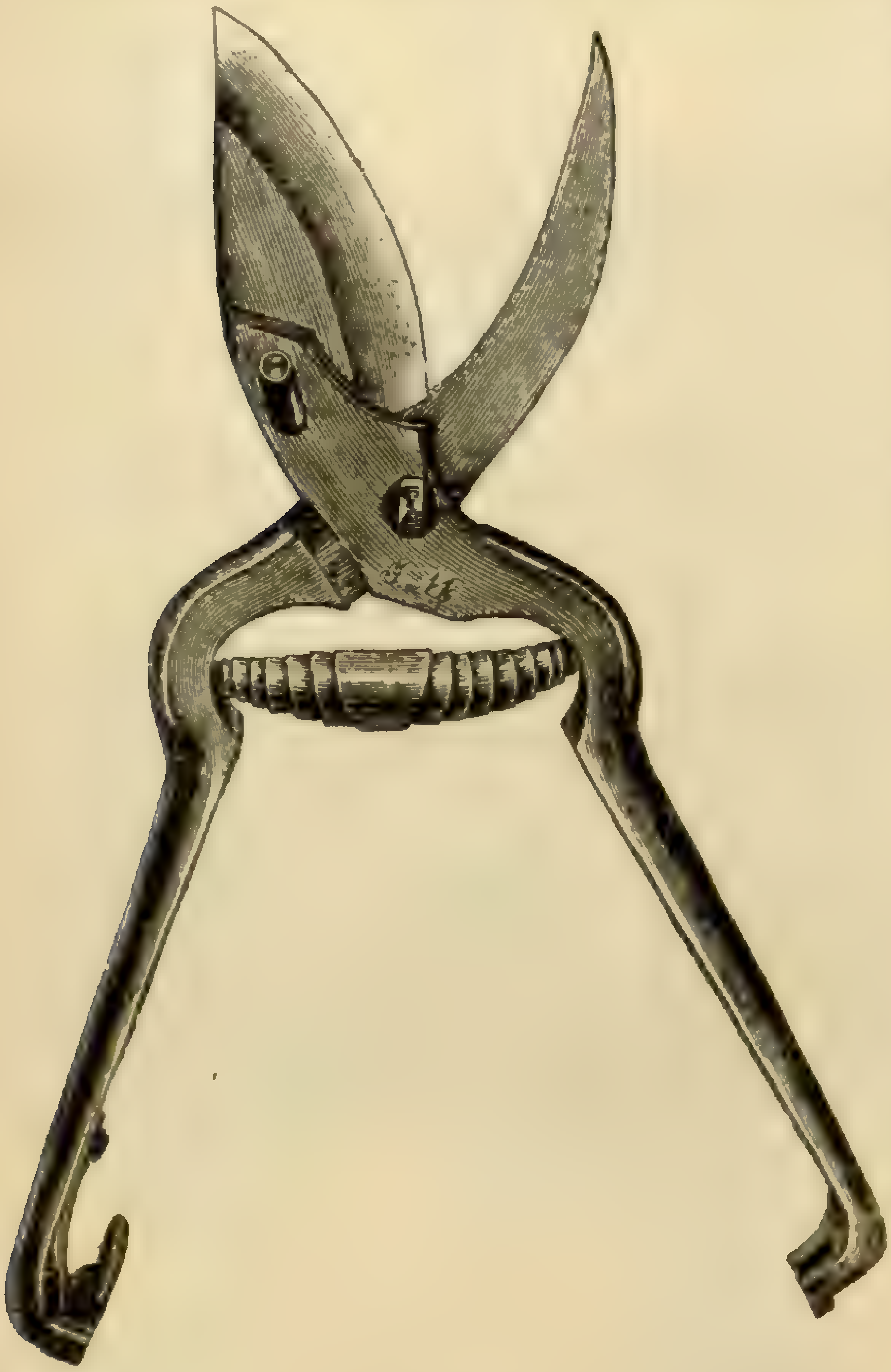


FIG. 35.

PRUNING SAW.—(FIG. 36.) The teeth of this saw do not require to be set; they are simply filed on the inner side, the unfiled surface of every other tooth being upon the same side of the saw.—*Bottner, in Der Praktische Ratgeber im Obst-und Gartenbau, 157.*

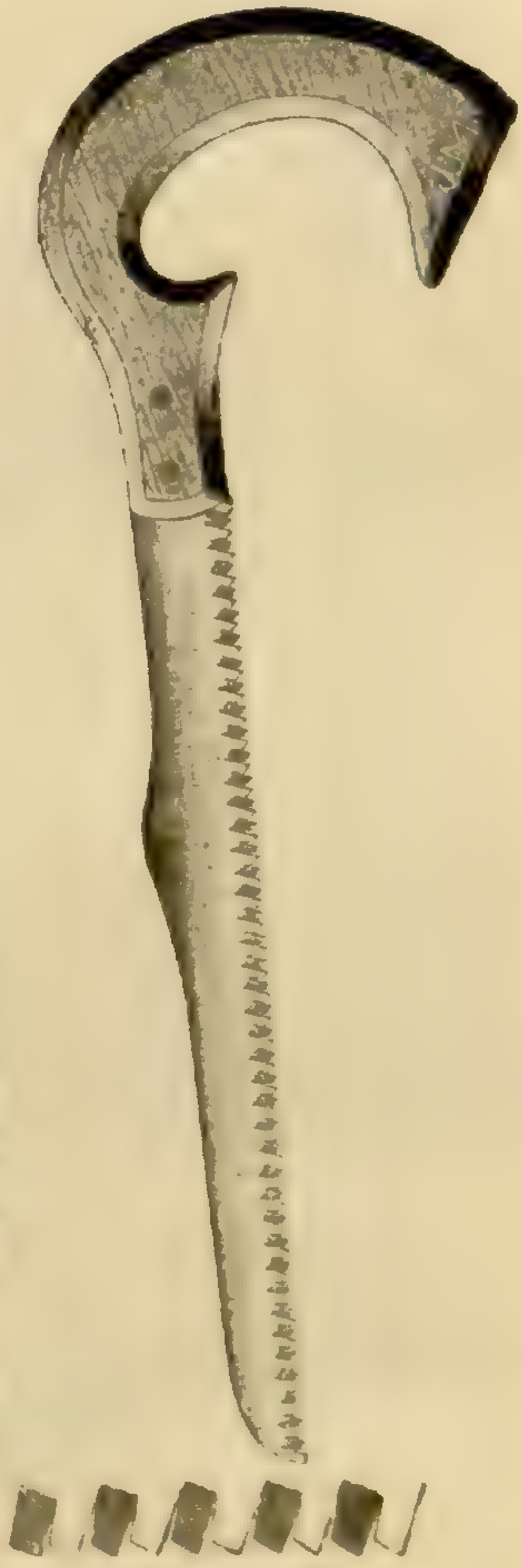


FIG. 36.

DEVICE FOR FASTENING TWO LADDERS TOGETHER.—(Fig. 37.) The device is secured to both sides of the top of the ladder. The inner aspect of the device is shown in the engraving. A pin, *a*, is pulled down by a wire, *d*, so as to admit one of the lower rounds of the second ladder. The spiral spring, *b*, throws the pin back into place.—*American Agriculturist, 475*.

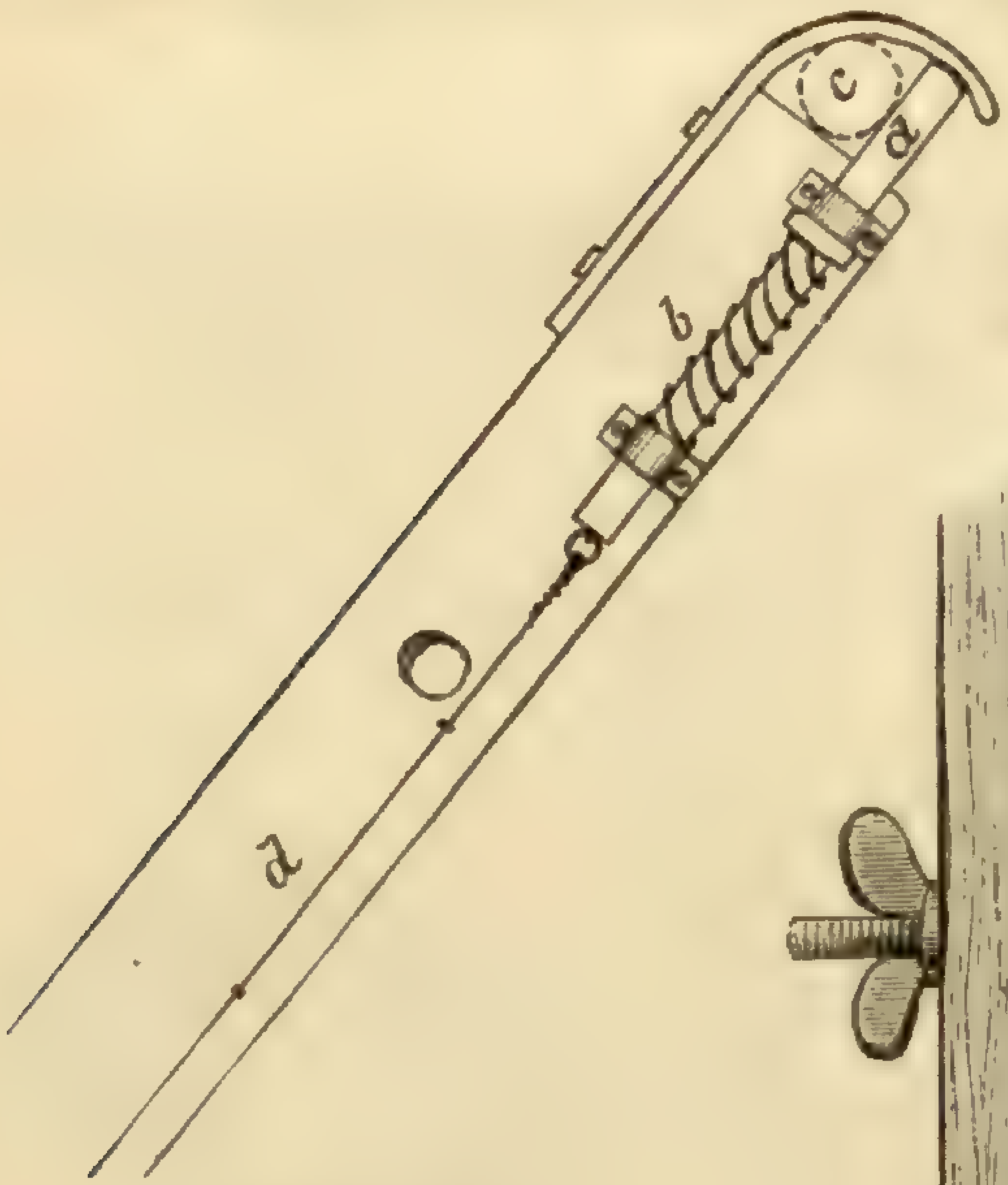


FIG. 37.

LADDER SUPPORT.—(Fig. 38.) A German device is here shown. Both supports are fastened to a curved piece of iron and allow of being spread apart or used as a single leg. —*R. Betten, in Der Praktische Ratgeber im Obst-und Gartenbau, 351.*

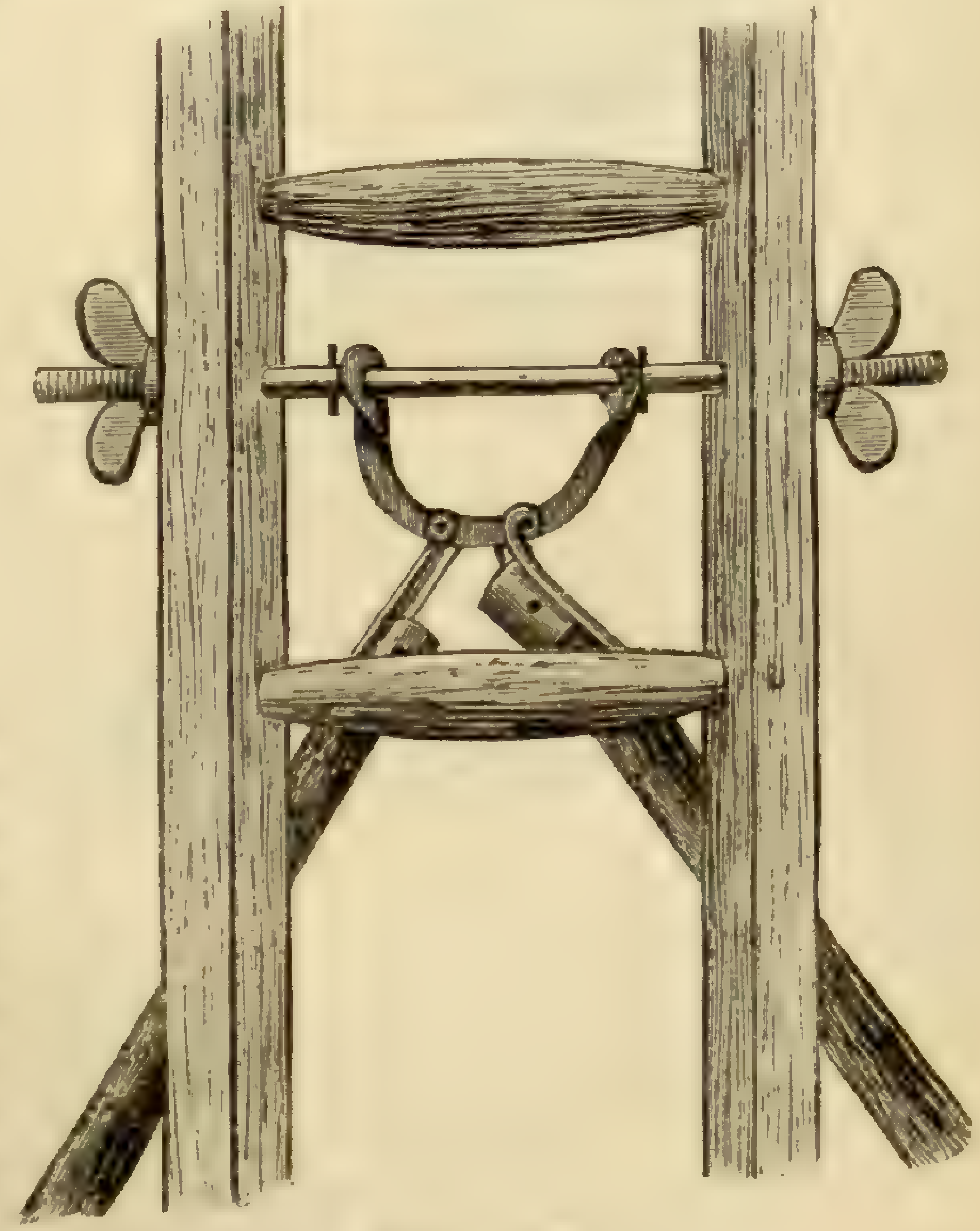


FIG. 38.

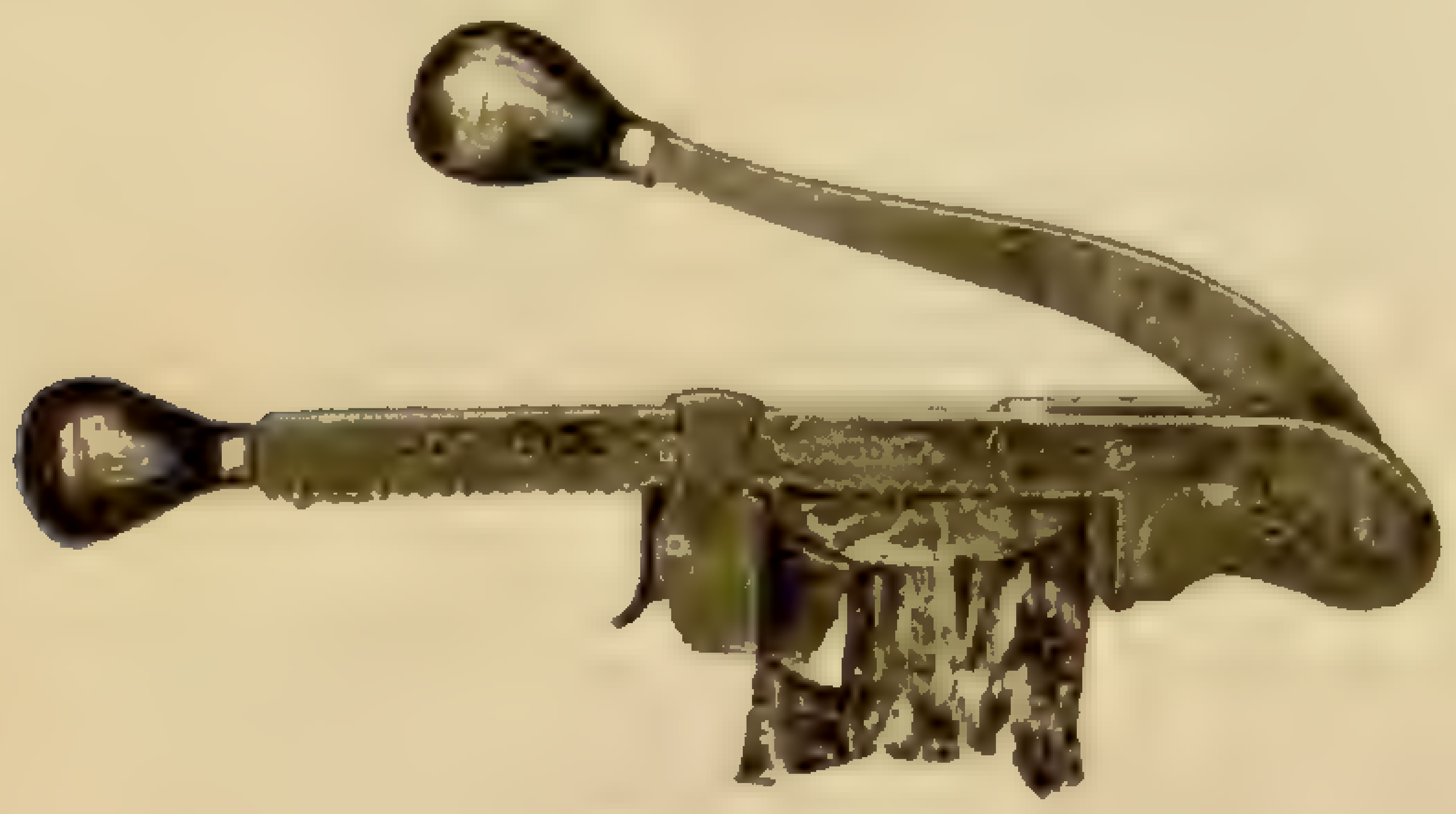


FIG. 39.

HOIT'S GRAFTING-DEVICE. (Fig. 39.) The cut gives a correct idea of the grafter, as it is set on the stub ready for use. The concave back-piece is set and held in place by the trigger working in the notches. To cut, the top handle is turned over to the right, and, acting as a lever, drives the knife in, cutting the slot in the side. It is quickly loosened and removed, the whole work being done in an instant.—*Catalogue of Hoit, Taylor & Co., Cal.*

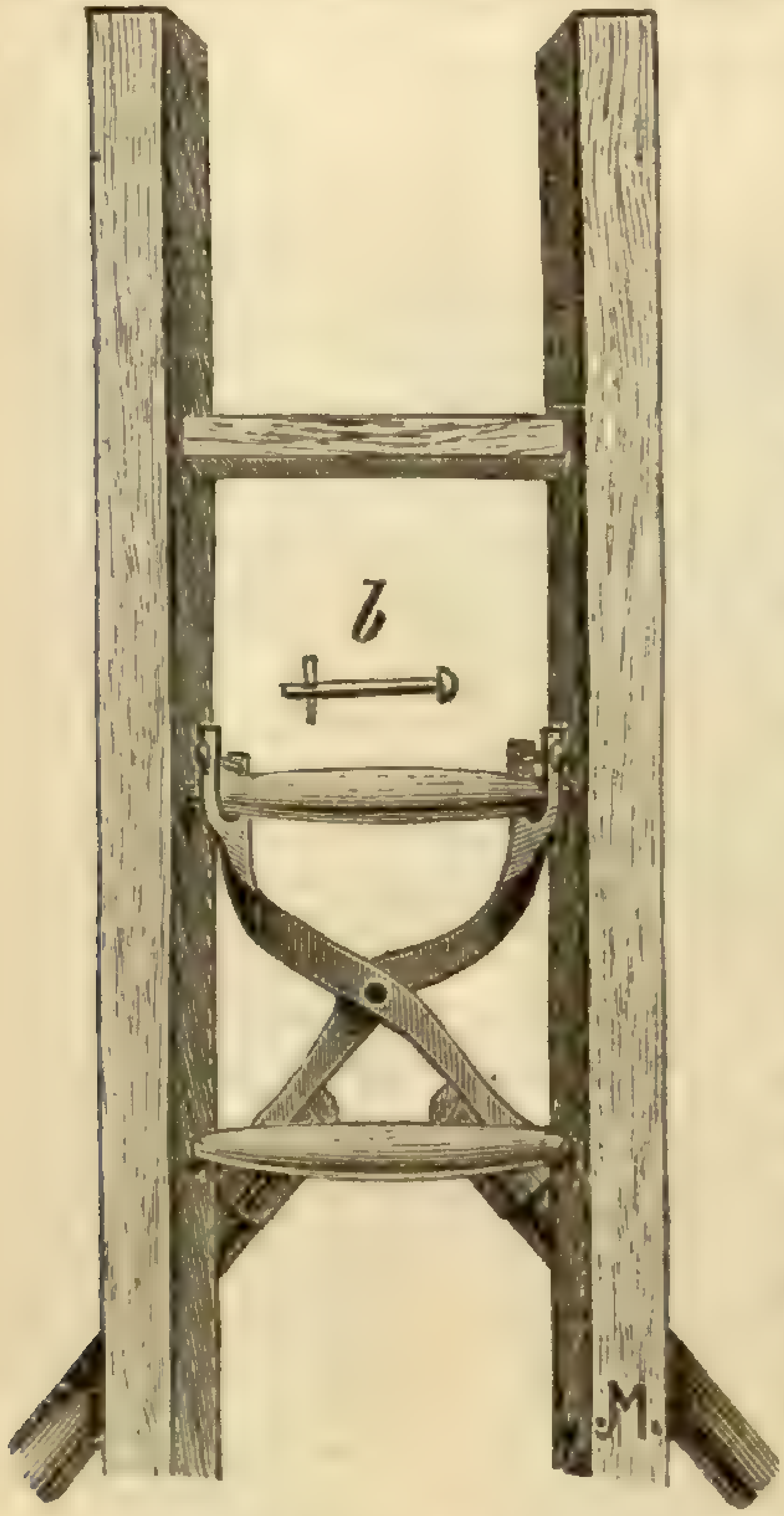


FIG. 40.

LADDER SUPPORT.—(Fig. 40.) This may be made to fit any ladder, and it can be easily put on or taken off. The pin (*b*) is used at the intersection of the two supports, which are of iron.—*Lehrer P. Schmitz, in Der Praktische Ratgeber im Obst-und Gartenbau, 384.*

SEED SEPARATOR.—(Figs. 41, 42.) This is a machine for separating seeds from pulpy fruits, like cucumbers and tomatoes. A shaft, with knuckle joints at *a′*, *a′*, is connected with a horse power so as to secure about 20 revolutions per minute; *b* is a screen covered with wire netting of one-fourth inch mess; *c* is a roller, which meshes into a second one *c′*, by means of spiral cogs; *d* is a hopper, into which the fruit is placed; *e* is a slide by which the crushed fruit is directed into the revolving screen *b*; *f* is a vat to receive the seed and pulp from *b*, built in the

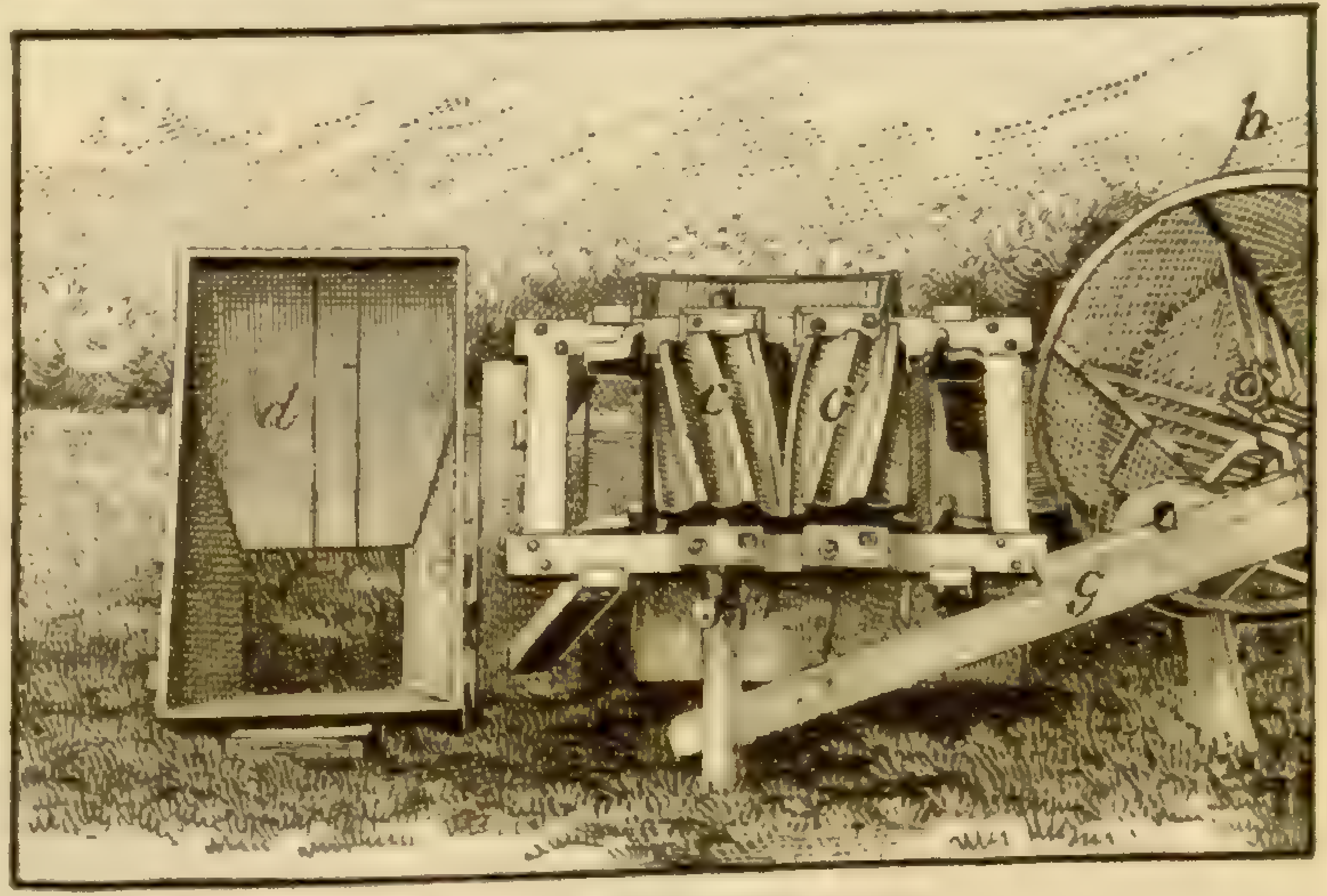


FIG. 41.

ground and lined with boards, but open enough to allow the liquid to soak out; *g* is a jack, which is manipulated to give the screen *b* more or less pitch. — *W. W. Tracy, in American Agriculturist, 112.*

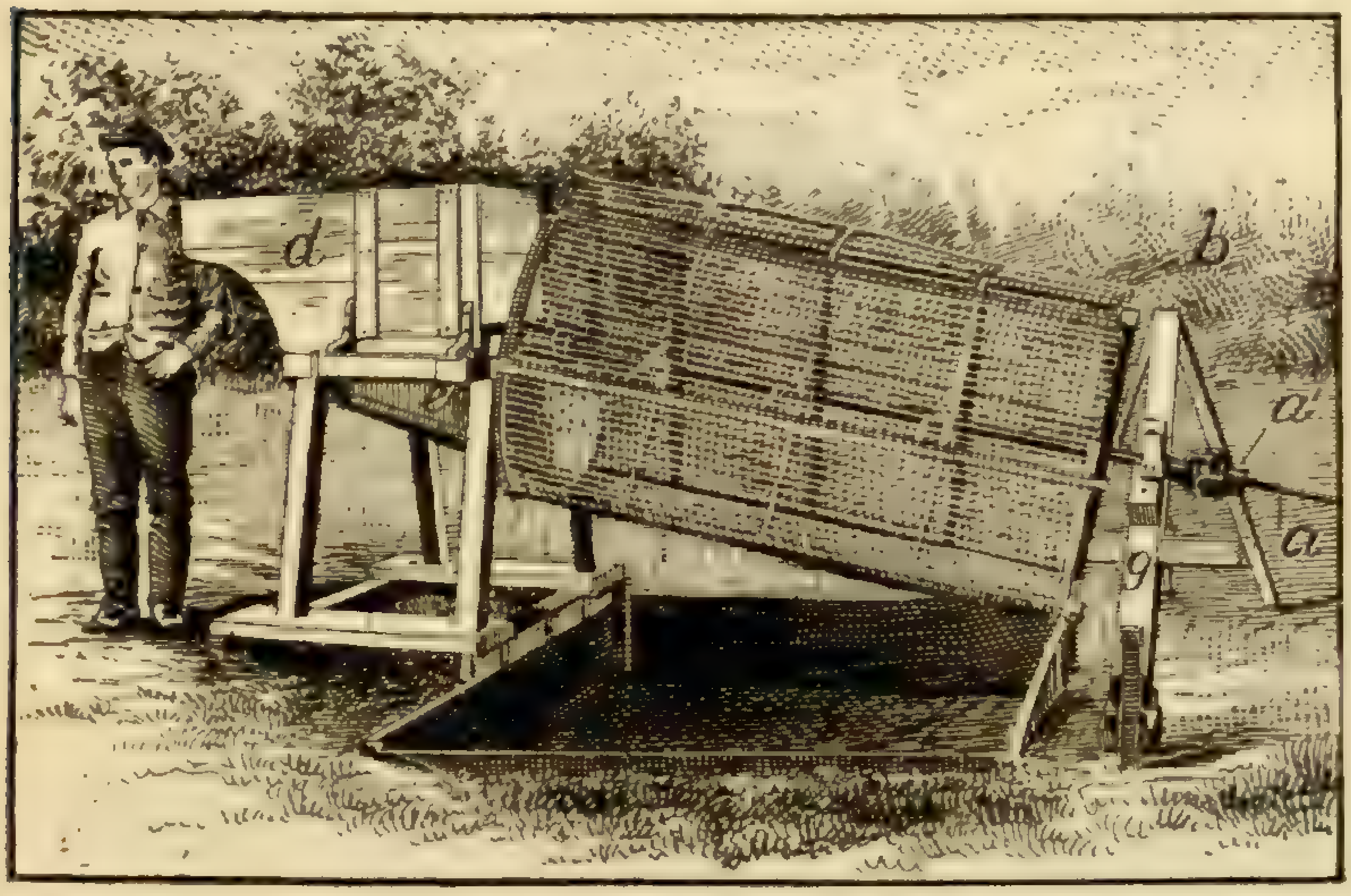


FIG. 42.

APPLE GRATER.—(Fig. 43.) The illustration is 1-10 natural size. The cover (*a*) fits in the receptacle (*b*) which is moved backward and forward over the grater, (*c*.).—*R. B., in Der Praktische Ratgeber im Obst-und Gartenbau, 369.*

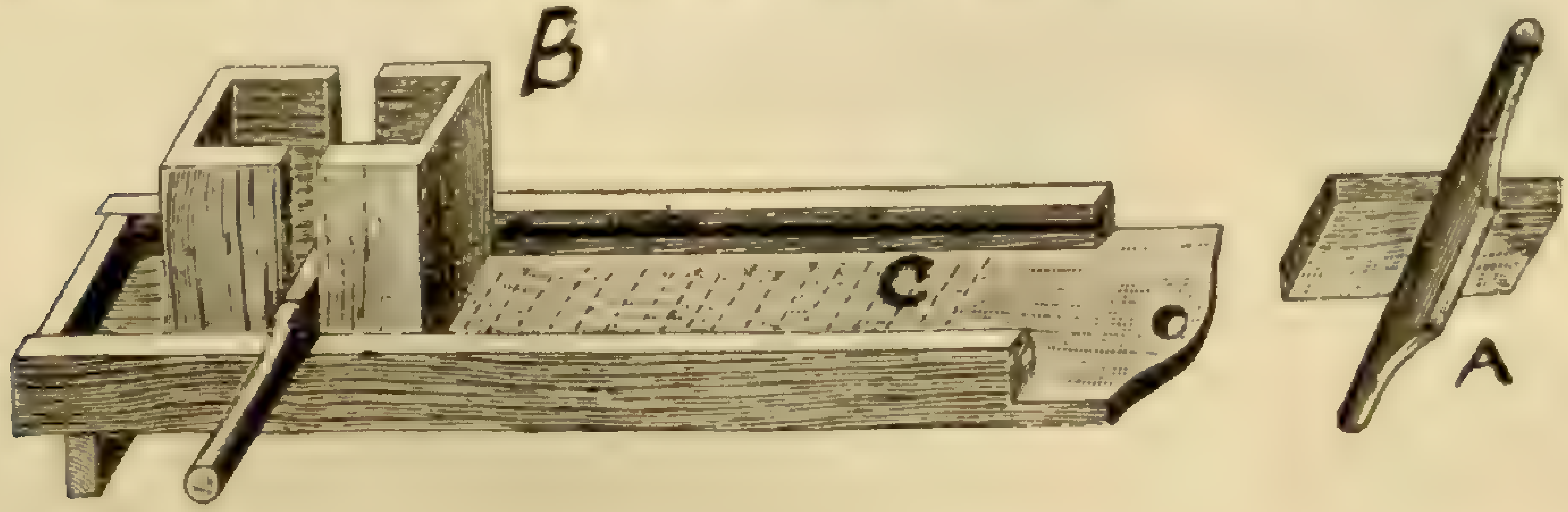


FIG. 43.

SIMPLE BERRY-TRAY.—(Fig. 44.) It is made of common sheet-iron, bent and riveted as shown in illustration, with handle made of a piece of band-iron.—*American Gardening, 292.*

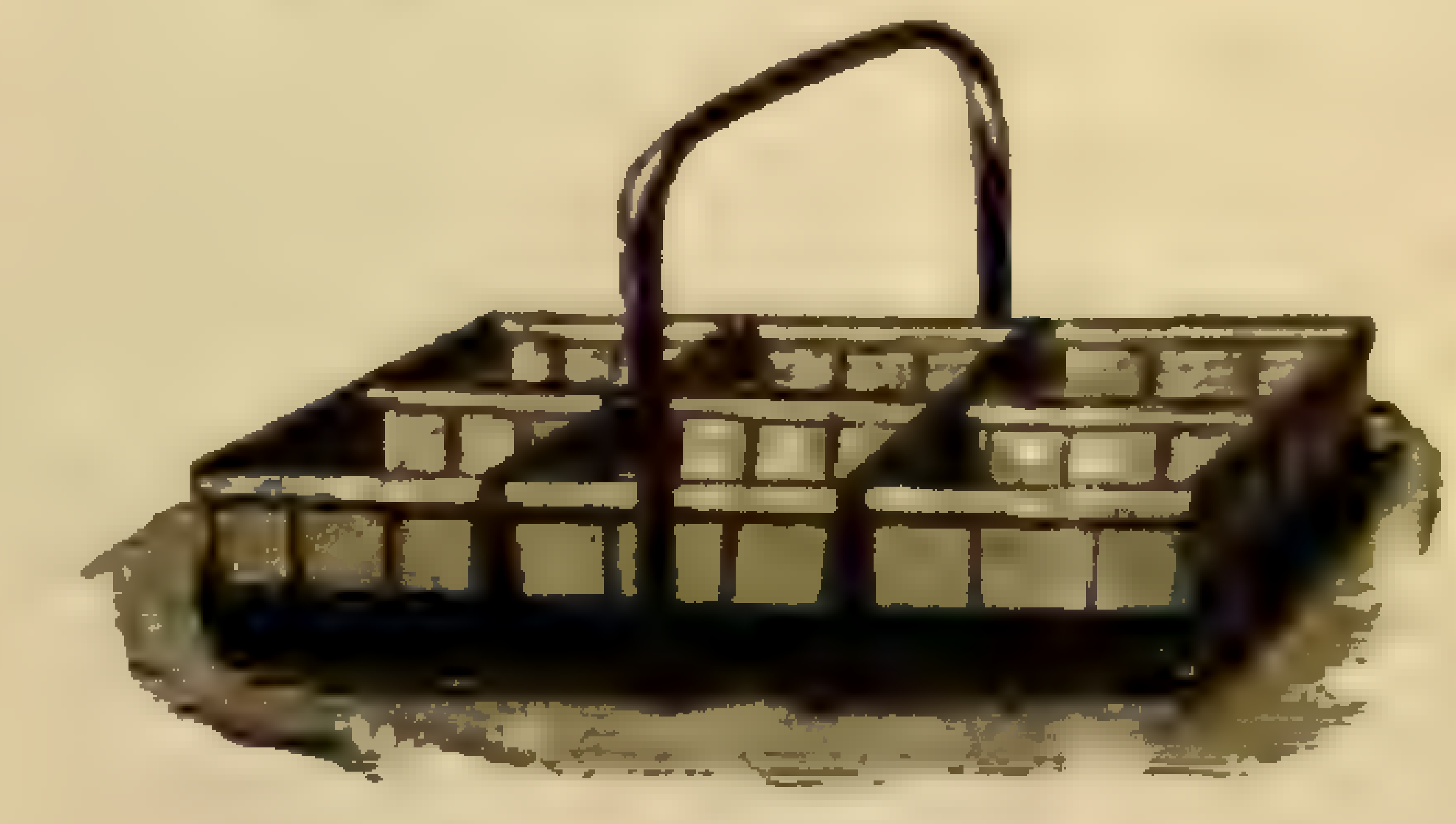


FIG. 44.

DEVICE FOR PLACING YARN UPON TREES.—(Fig. 45.) A spool of desired size is fastened to the end of a pole by means of a pin. A wire having a loop in the center for the passage of the twine is fastened at each end to this pin. The twine is drawn out on the pole, is moved over or around the tree. For scaring birds away from cherries.—*Meinecke, in Der Praktische Ratgeber im Obst-und Gartenbau, 230.*

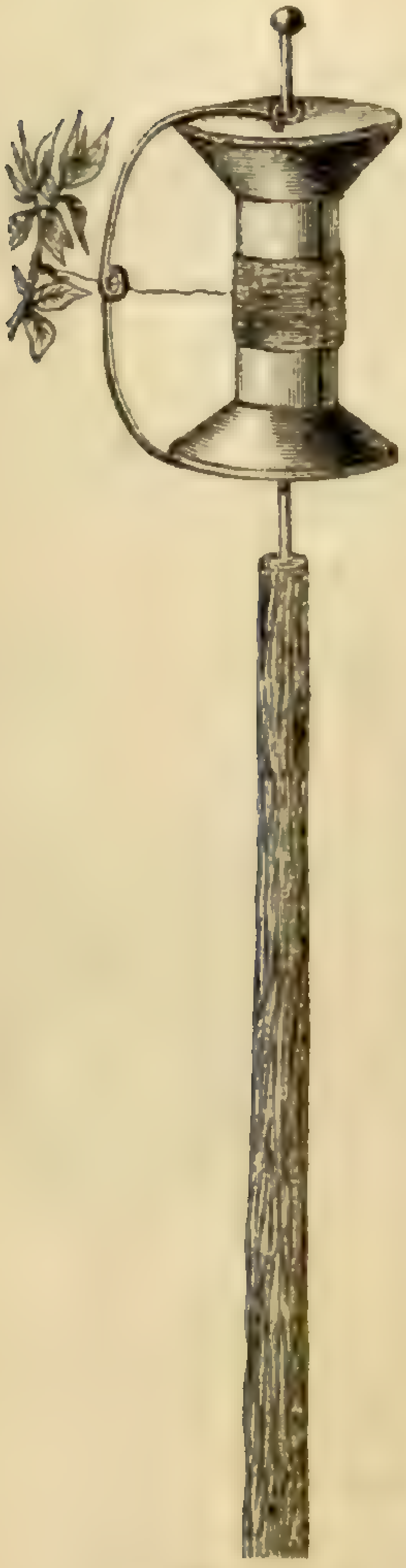


FIG. 45.

FRAME FOR HOLDING FRUIT.—(Fig. 46.) The rack may be folded, as shown in the illustration.—*A. Lesne, in Revue Horticole, 351.*

A NEW TYING MATERIAL.—Under the name "Taroba" the proprietor of McArthur's Nursery, Maida Vale, London, W., imported a new material for tying plants, and the trial having been satisfactory, it is resolved to use nothing else there for that purpose. It is a product of Mauritius, and its qualities, as alleged, are that it is the cheapest, handiest, and most durable thing ever introduced to use for the purpose, as it stands wet or drought equally well.—*The Gardener's Chronicle, Vol. xi. 81.*

BANDAGE FASTENER FOR TREES.—(Fig. 47.) Old corks are strung upon a stout wire at the ends of which are a hook and an eye. As the tree

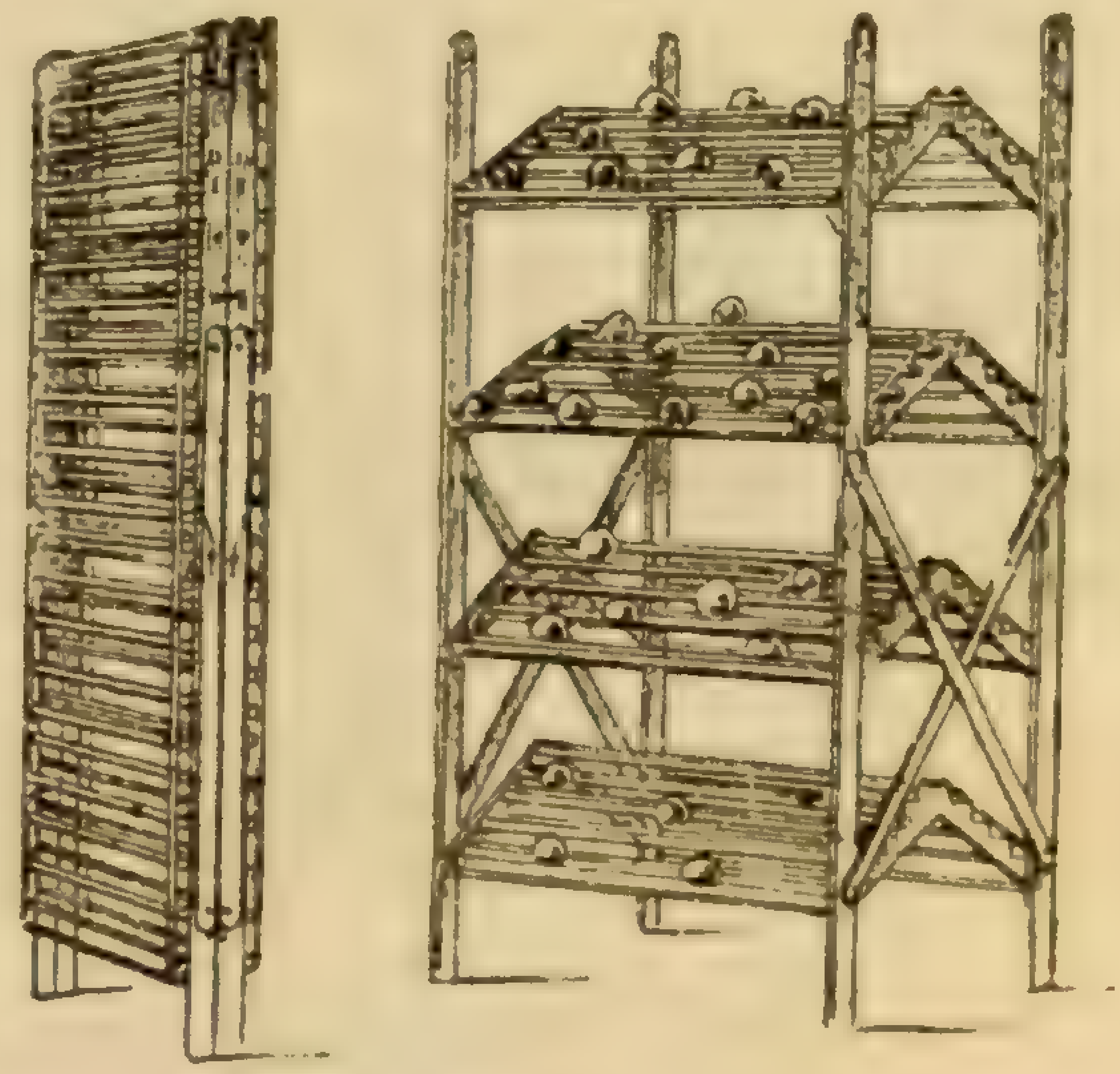


FIG. 46.

grows the corks yield.—*Jokisch, in Der Praktische Ratgeber im Obst-und Gartenbau, 264.*

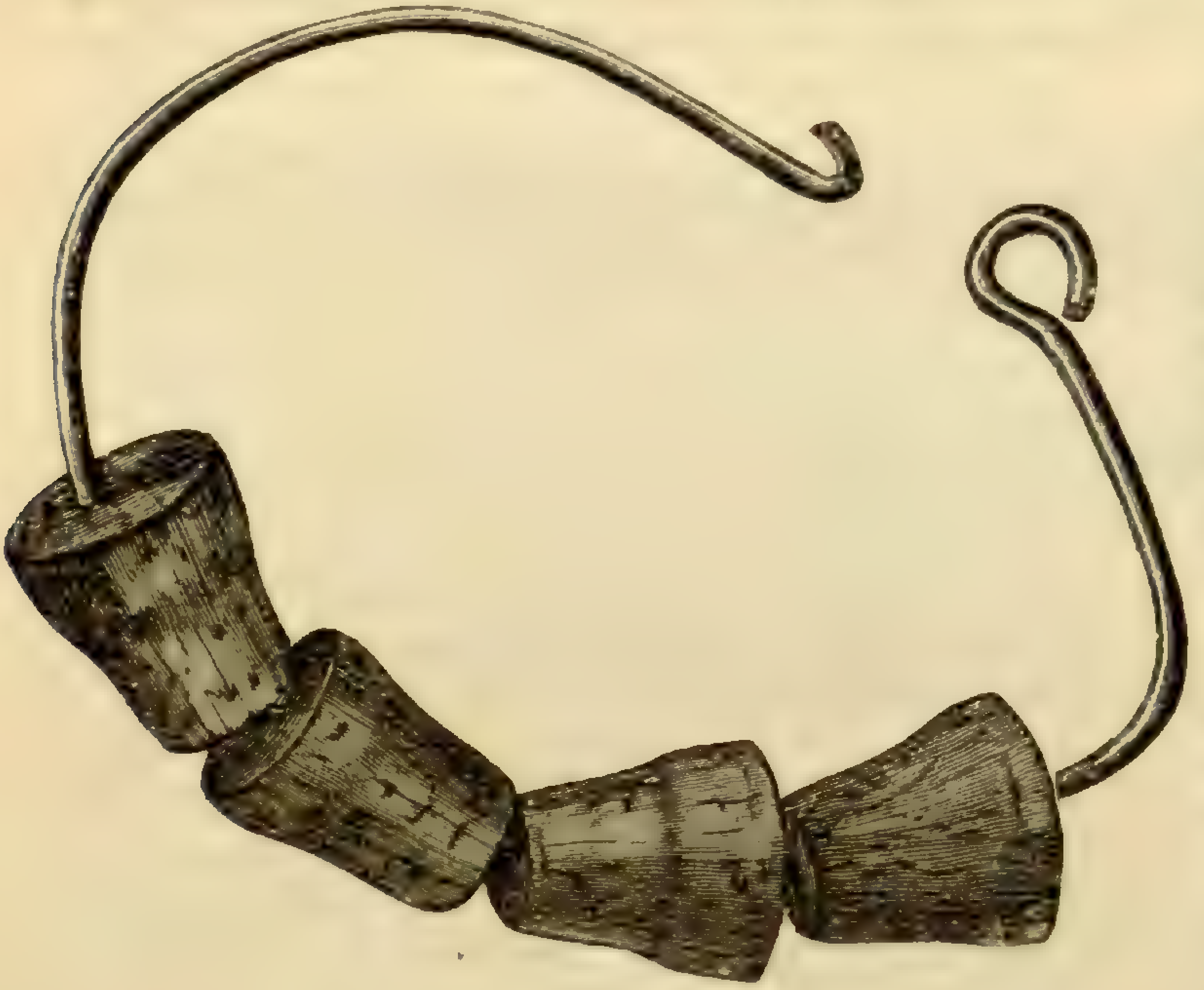


FIG. 47.

EXHIBITION LABEL HOLDER.—(Figs. 48, 49.) The lower end of a stout piece of wire (Fig. 48) is sharpened, and at a convenient point a coil of two turns is formed. The label is inserted in the coil, as shown in Fig. 49.—*Karcher, in Der Praktische Ratgeber im Obst-und Gartenbau, 67.*

LABEL FOR BEDS.—The face is made of zinc 3¼ x 1½ inches; on the back are soldered two iron rods for legs. These two supports hold the label firm, prevent it from turning about, and enable it to be easily thrust into the soil.—*Ex.*

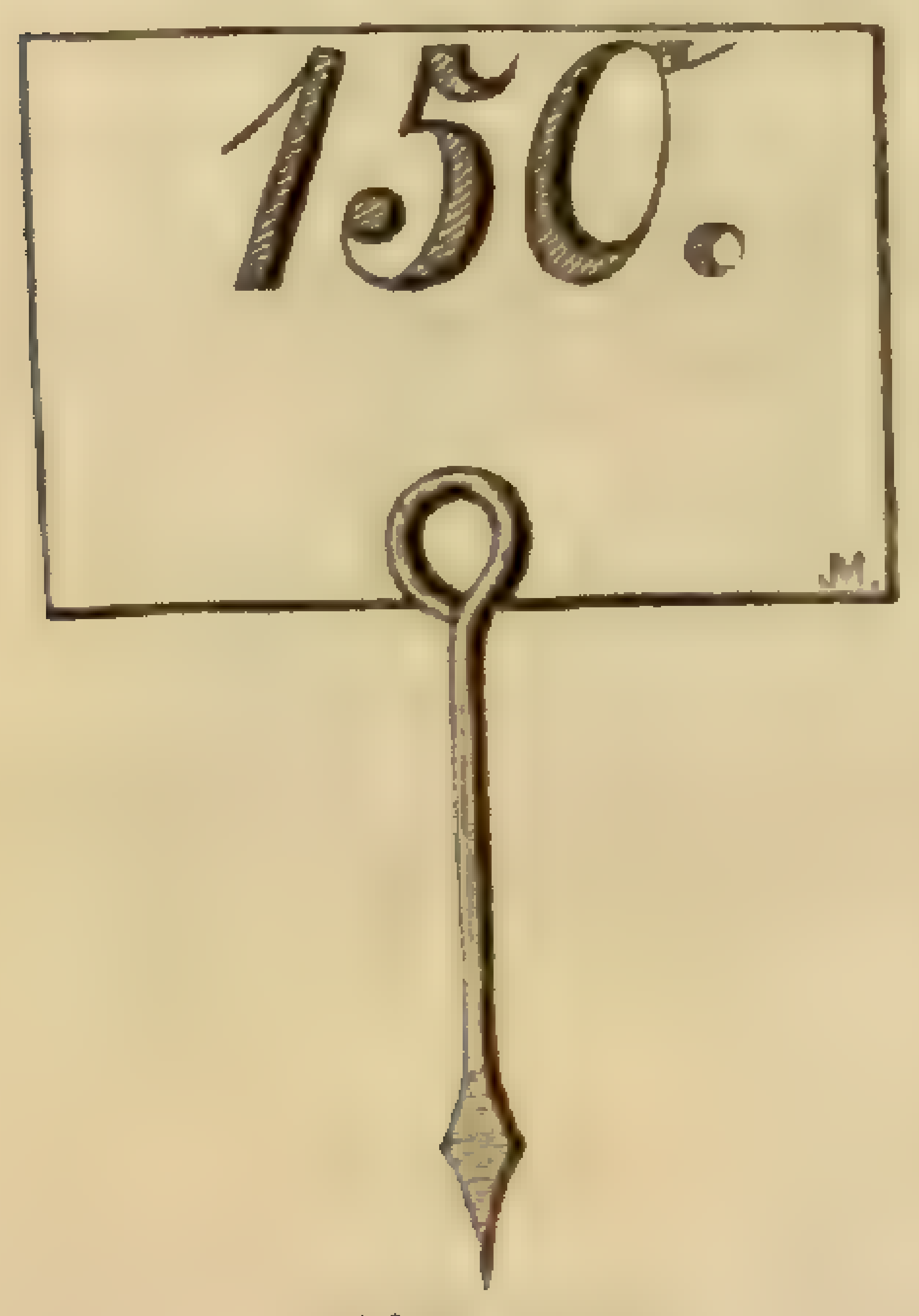


Fig. 49.

GLASS LABEL HOLDER.—(Fig. 50.) The label is made of glass. It is hollow in the center, but an opening allowing the passage of a paper label is left at the bottom. After the label has been put in, the opening is closed with plaster of Paris or some other material. —*Der Praktische Ratgeber im Obst-und Gartenbau.*

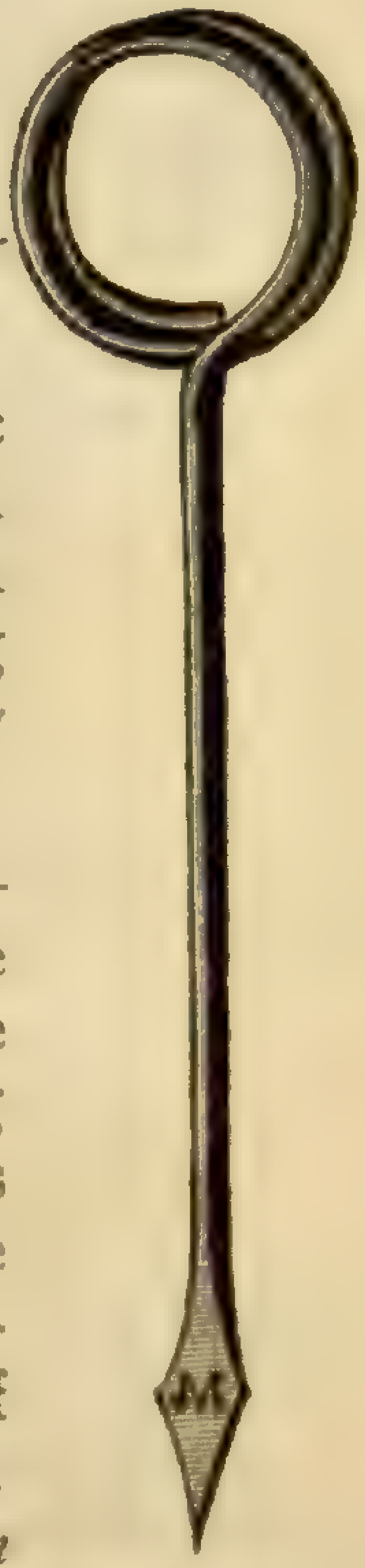


FIG. 48.

TREE PROTECTOR.—(Figs. 51, 52.) Made of lath, cut two or three feet long. Seven or eight laths are used to each tree, and they are held together by No. 18 wire. The device is easily made on a bench, as shown in (Fig. 52.) On the upper side is a wooden spring to hold the material taut while the laths are being wired together.—*E. S. Goff, in American Gardening, 763.*

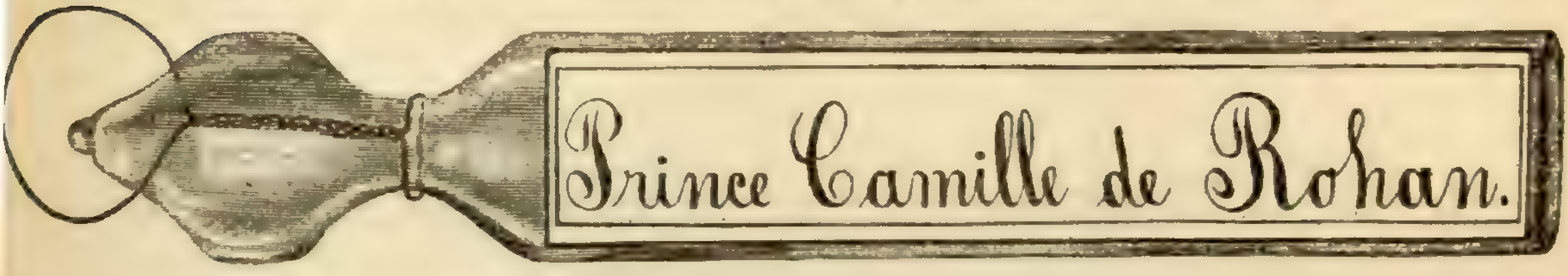

Prince Camille de Rohan.

FIG. 50.

TEMPERING HYDRANT WATER.—Take 3-inch pipe 3 feet long and run the heating pipe through it. This outside pipe is to contain the cold water. This outside or jacket pipe has a thread cut on each end. To each end is connected a T having an opening of 1-inch, and having the straight-away end plugged down to ¾-inch. To these straight-away ¾-inch openings the hydrant or watering pipe is connected. The ½-inch steam-pipe is now to run through this water jacket, by entering in one T, passing through the jacket 3 feet, and leaving by the other T. One T looks up and the other looks down. These T's are prolonged by

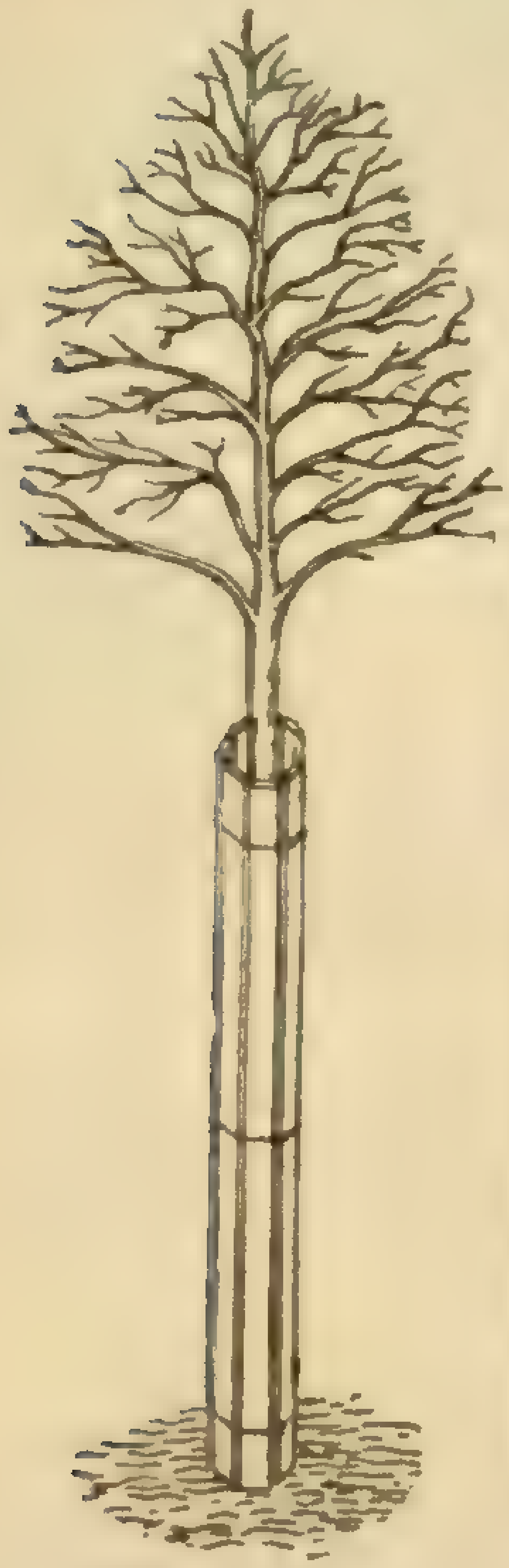


FIG. 51.

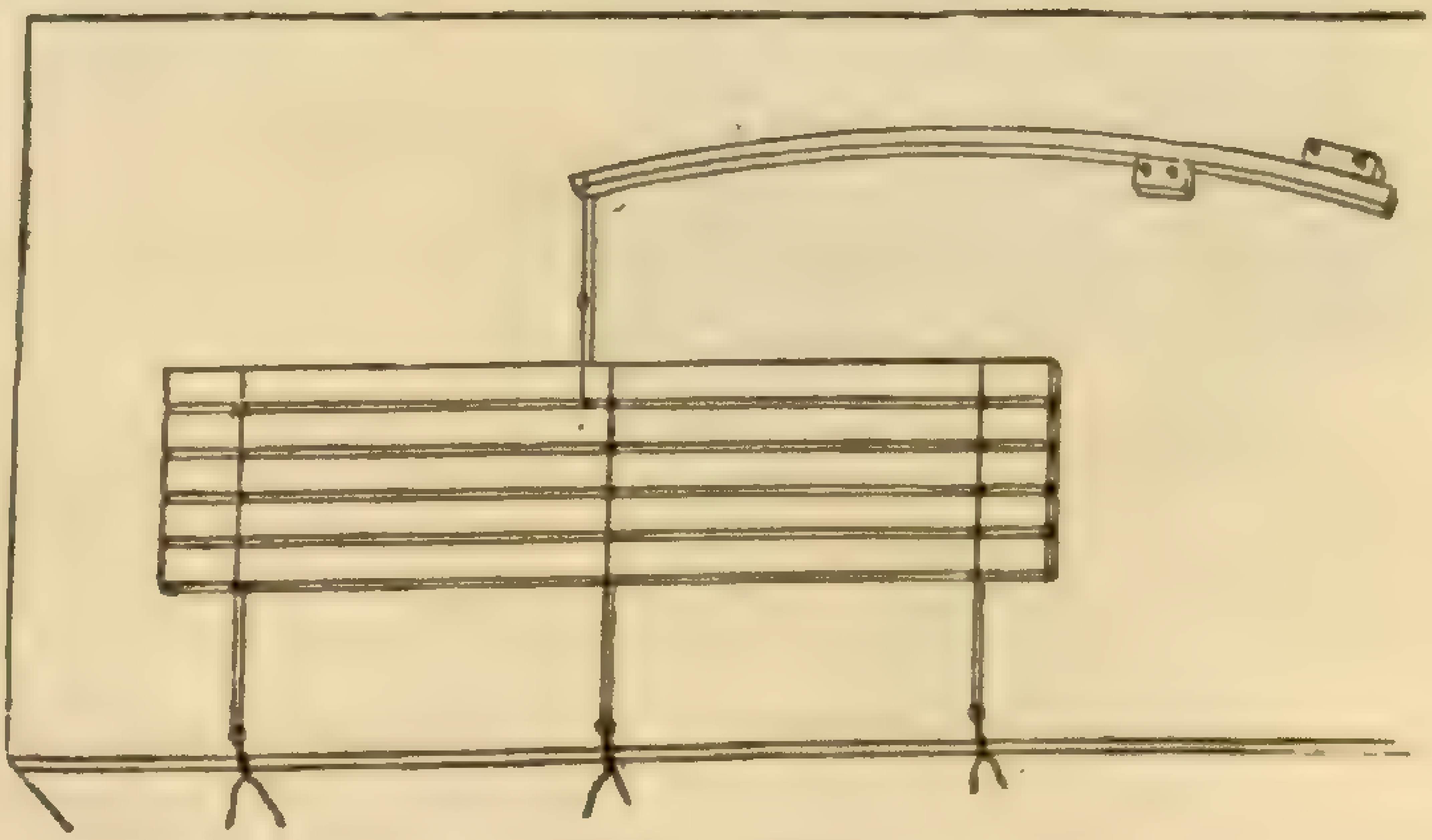


FIG. 52.

1-inch nipples about 4 inches long, upon the end of each of which is a cap with a half-inch hole drilled through it. This cap fits tightly about the steam pipe, and all leak is prevented by a little packing.—*Ex.*

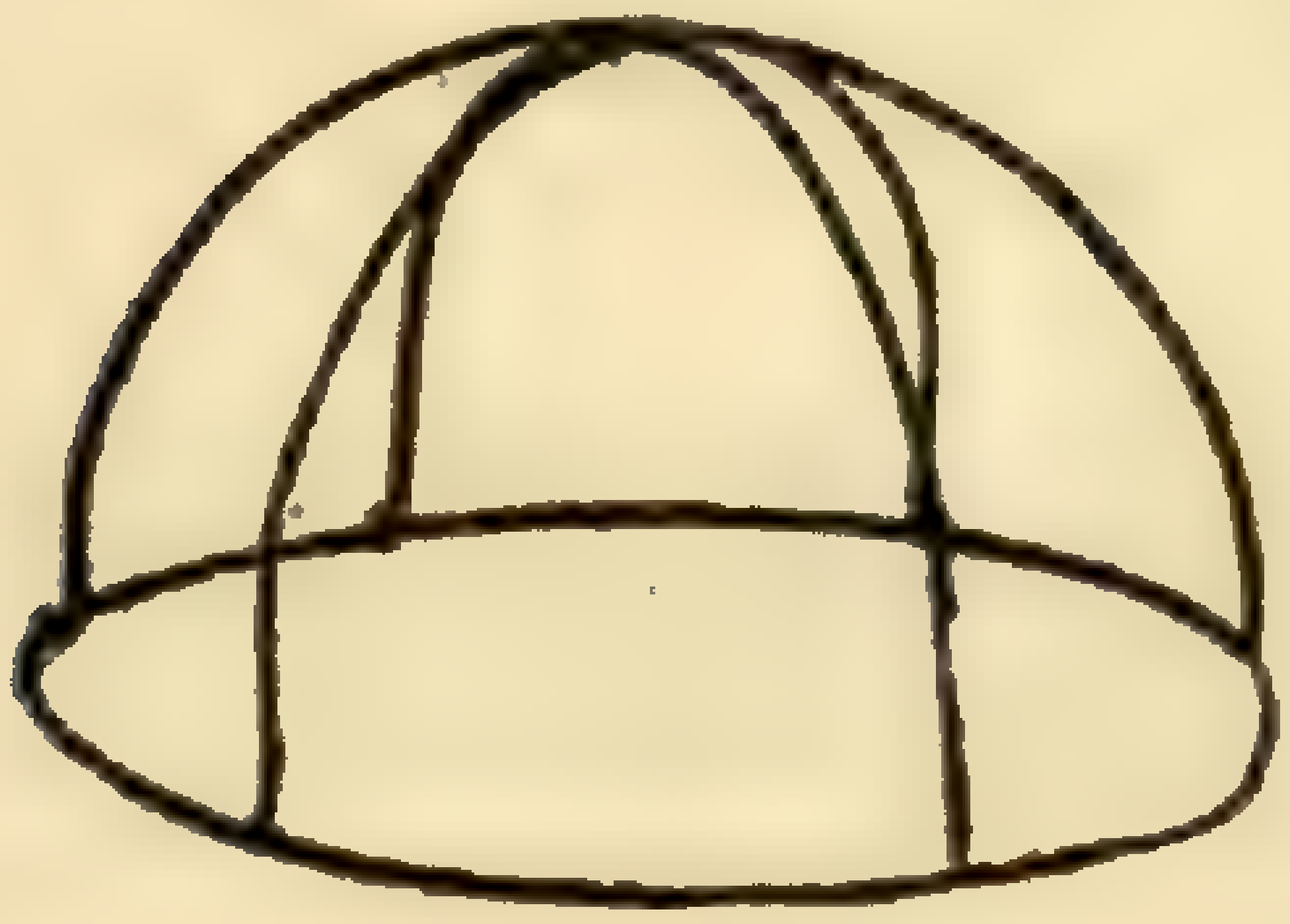


FIG. 53.

TEMPERING HYDRANT WATER.—In the old style of hot water heating where 4-inch pipes are used, warm water can be had by building an inverted U-shaped hollow galvanized jacket over the pipes. This jacket should be big enough to hold about 20 bbls. If it straddles a run of four pipes, the water will soon heat, if the jacket is only five or six inches thick. Connect hydrant supply with it at one side near bottom and draw off from the top.—*Ex.*

PLANT PROTECTOR. (Fig. 53.) Made of No. 8 wire, and is 15 inches in diameter. The frame is covered with netting or cheese cloth.—*Farm and Home.*

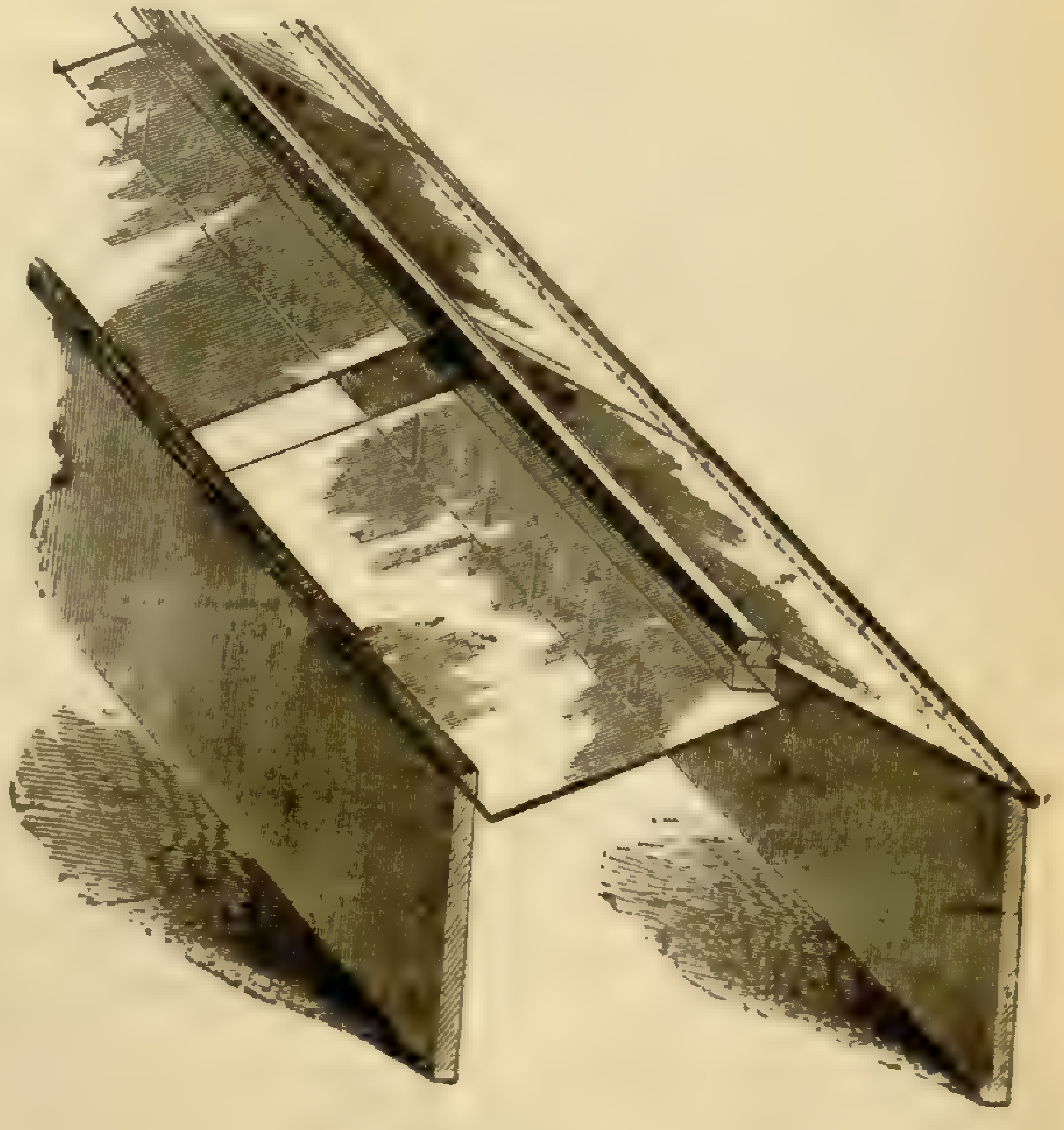


FIG. 54.

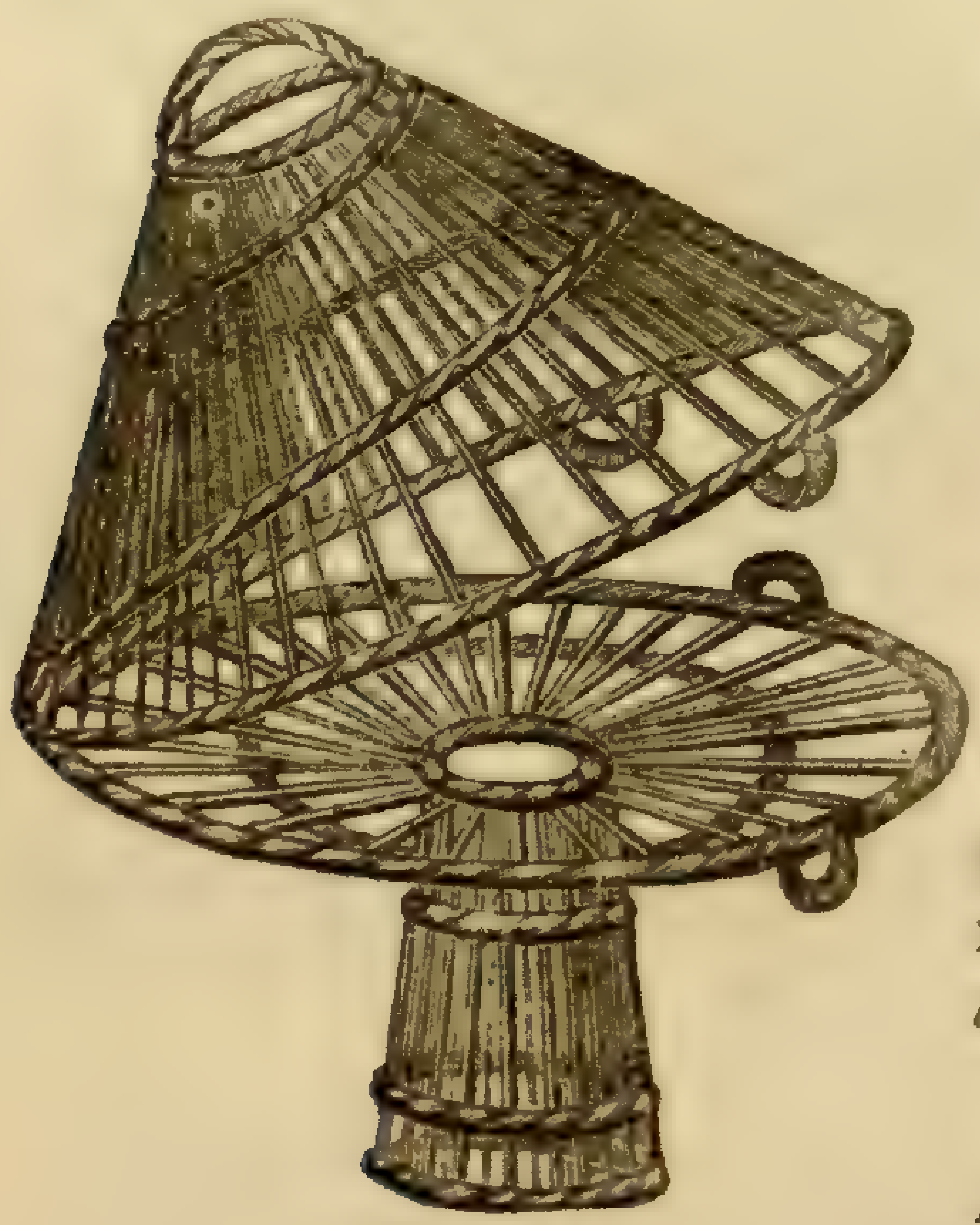


FIG. 55.

GRIMSTON PLANT PROTECTOR.—(Fig. 54.) This device is cheap, movable, and efficient.—*The Gardener's Chronicle, Vol. xi. 437.*

FRAME FOR SHIPPING BOUQUETS AND CUT-FLOWERS.—(Fig. 55.) The basket is made of wire. If cloth is put on the inside, it will do much to preserve the flowers.—*Der Praktische Ratgeber im Obst-und Gartenbau, 40.*

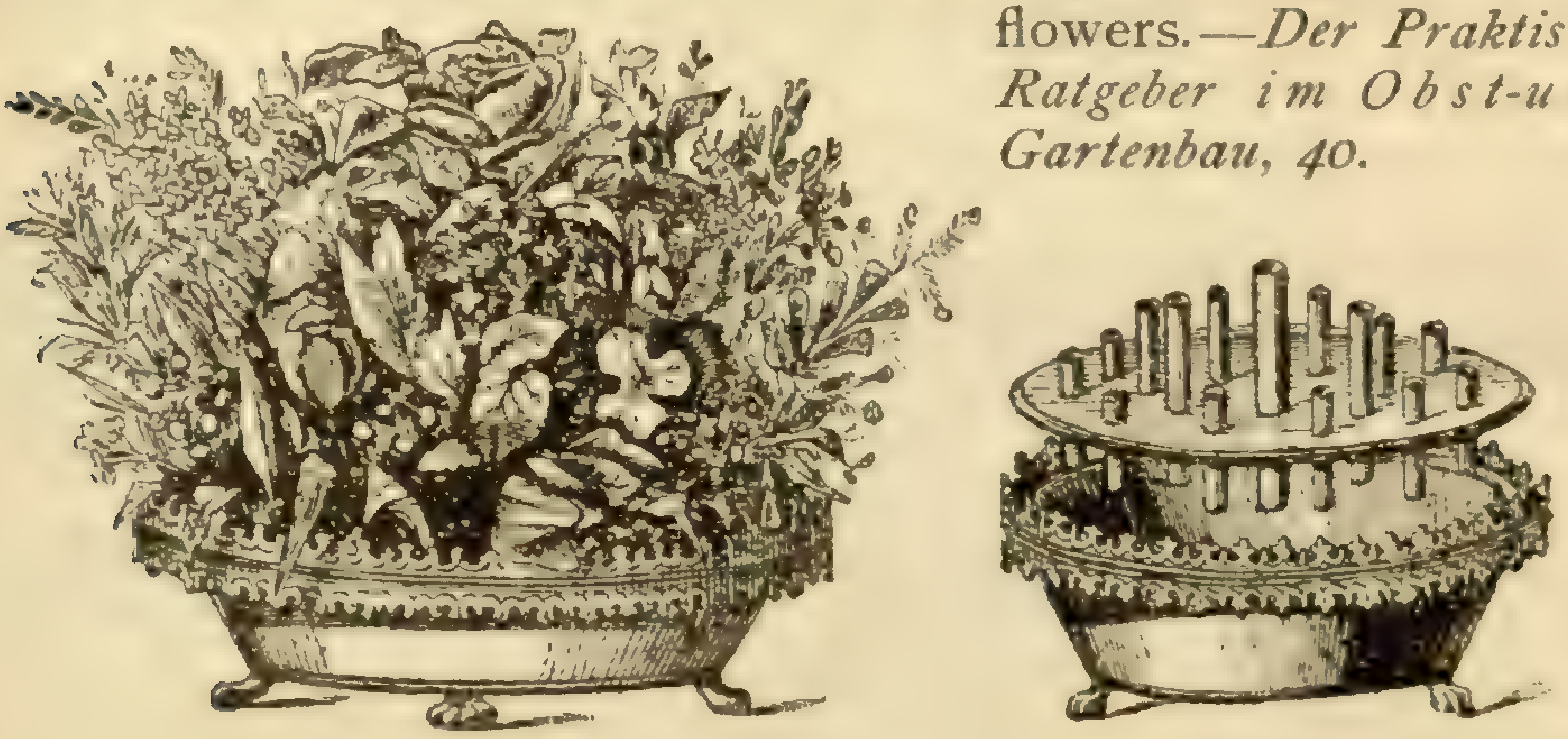


Fig. 56.

Floral Basket.—(Fig. 56.) The lower part consists of metal; it is designed to hold water. The cover which fits over it is penetrated by holes of various sizes for holding tubes. The tubes are of different lengths, but the lower end of each should be in the water below. The illustration shows the cover and tubes slightly raised. The cut-flowers are inserted into the tubes, their stems being in the water. The arrangement allows the water to be changed easily, and wilted flowers may also be taken out by simply removing the tube in which they are found.—*Montey, in Revue Horticole, 421.*

Cellar-Way Plant Pit. (Figs. 57, 58.) The cellar-way almost invariably is made to face the south, and is thus in the right situation. All that is needed is to substitute glass for the wooden doors, and make everything snug and tight, banking with earth if thought necessary. The inner cellar door is left open, and danger from freezing thus avoided.

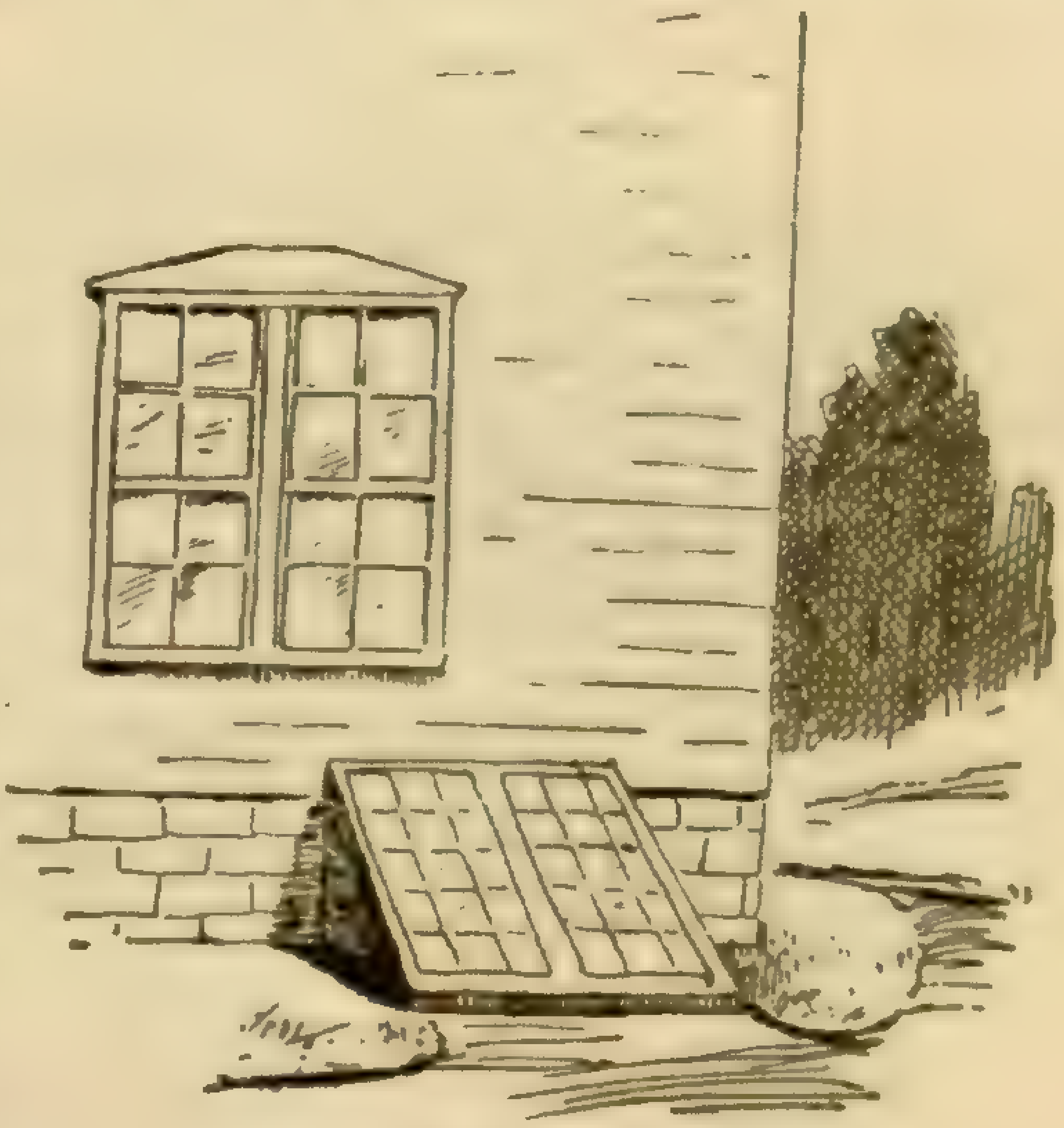


Fig. 57.

The cellar stsps serve as plant-shelves.—*American Gardening, 105.*

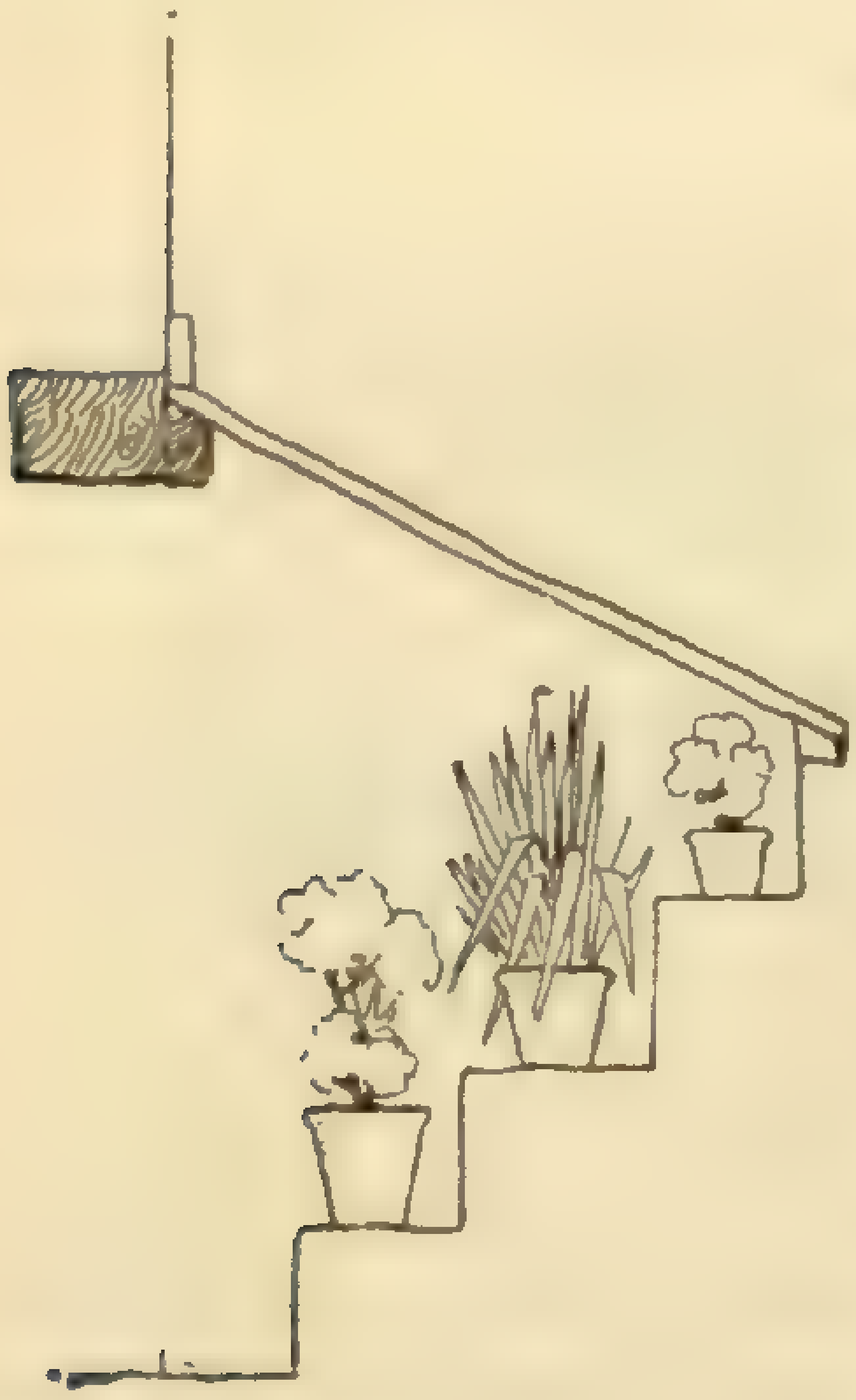


FIG. 58.

CELLAR HOT-BED.—(Fig. 59.) Opposite a warm south cellar window, B, a hot-bed sash, D, is placed. A shows the sill of the house. If the cellar is warmed with a furnace, enough heat can be secured by opening the window, B. *American Gardening, 225.*

GREENHOUSE HOD.—(Fig. 60.) Carrying dirt is a bad job anyway; yet the use of the hod makes it as easy as can be expected. Besides, the hands are left comparatively free, and the work of raising and lowering is reduced to a minimum. Our hods are two feet long, twelve inches deep, fourteen wide at the top and five at the bottom, and hold about what an ordinary man can easily carry. The sides are of light lumber, preferably pine; the bottom and end of inch stuff. We have found that in using the hod one man with two hods will carry the dirt 30 to 40 feet as fast as another will shovel it from the wagon, or two men with three hods will keep one man shoveling, and carry the dirt 75 to 100 feet.—*E. C. Green, in American Gardening.*

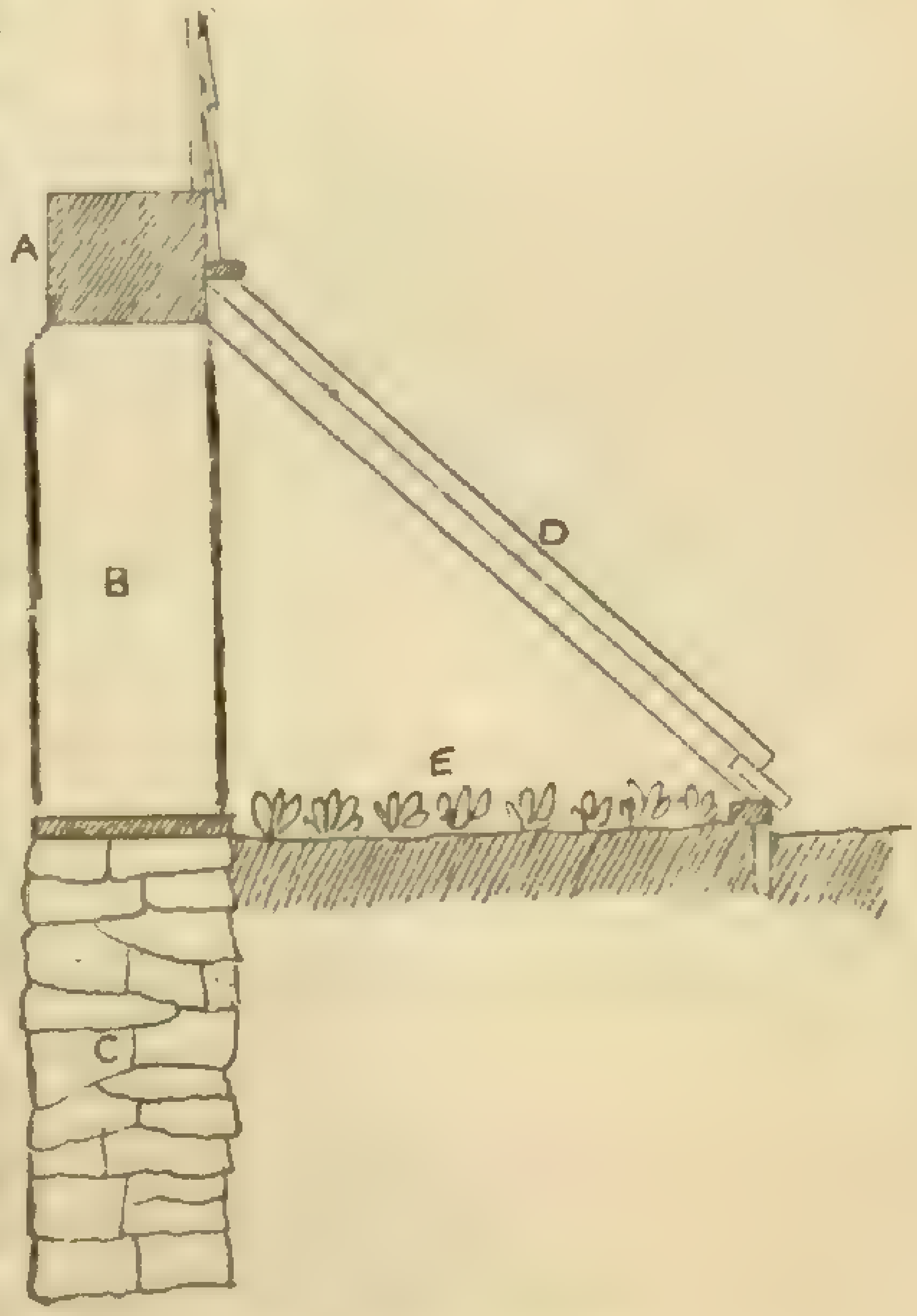


FIG. 59.

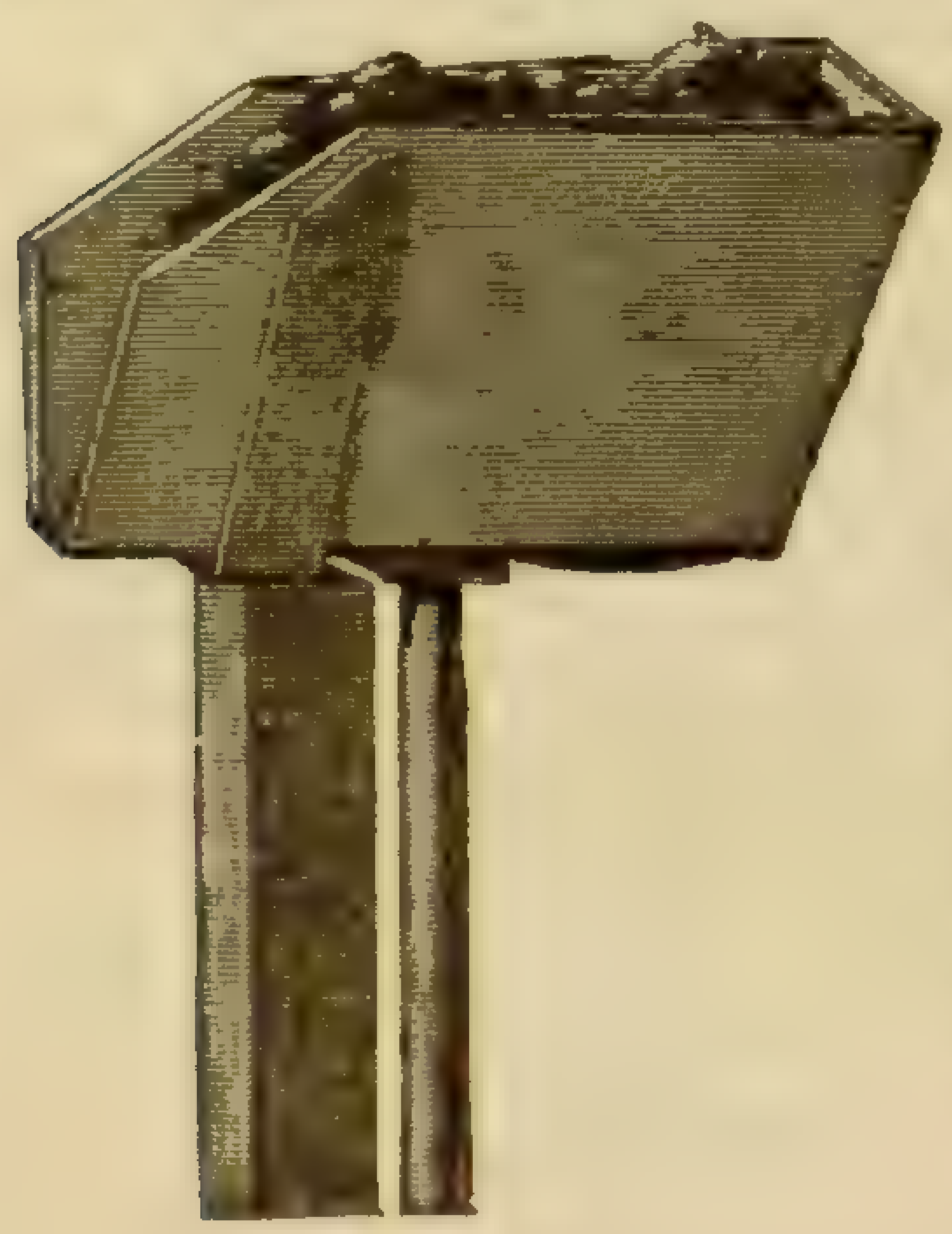


FIG. 60.

WATERING POT.—(Fig. 61.) A metal ring is fastened to the lower end of the pot, and the passage of air through the holes (h) keeps the bottom of the pot dry. To the end of the spout (e) is fastened a smooth conical piece of metal (d), and another (c), which fits closely over this, is inserted in the lower end of the funnel. The end of the spout is thus strengthened, and all dripping is avoided. The funnel is cleaned from the opening (f), over which a cap is tightly screwed.—*Carl Hildebrandt, in Gartenflora, 305.*

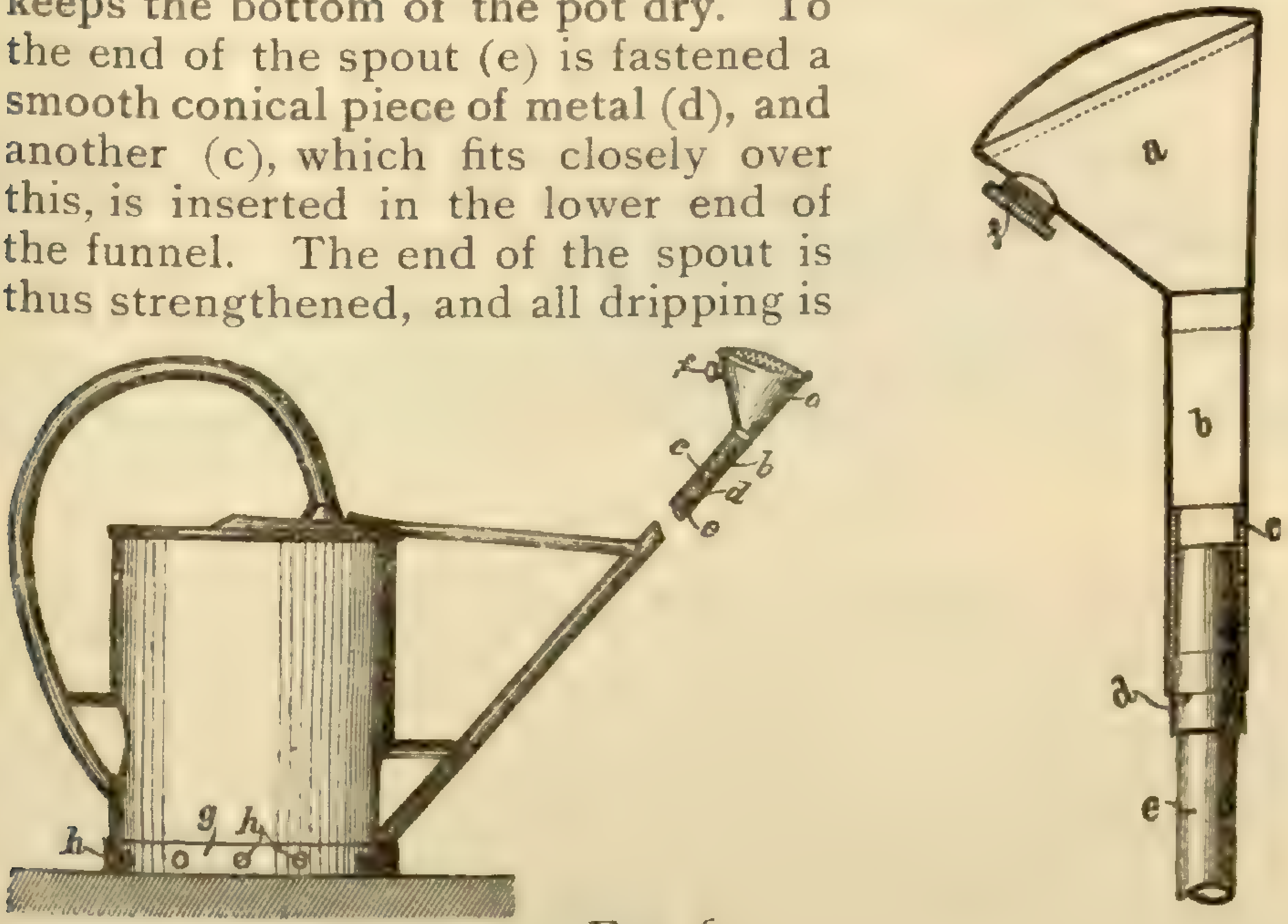


FIG. 61.

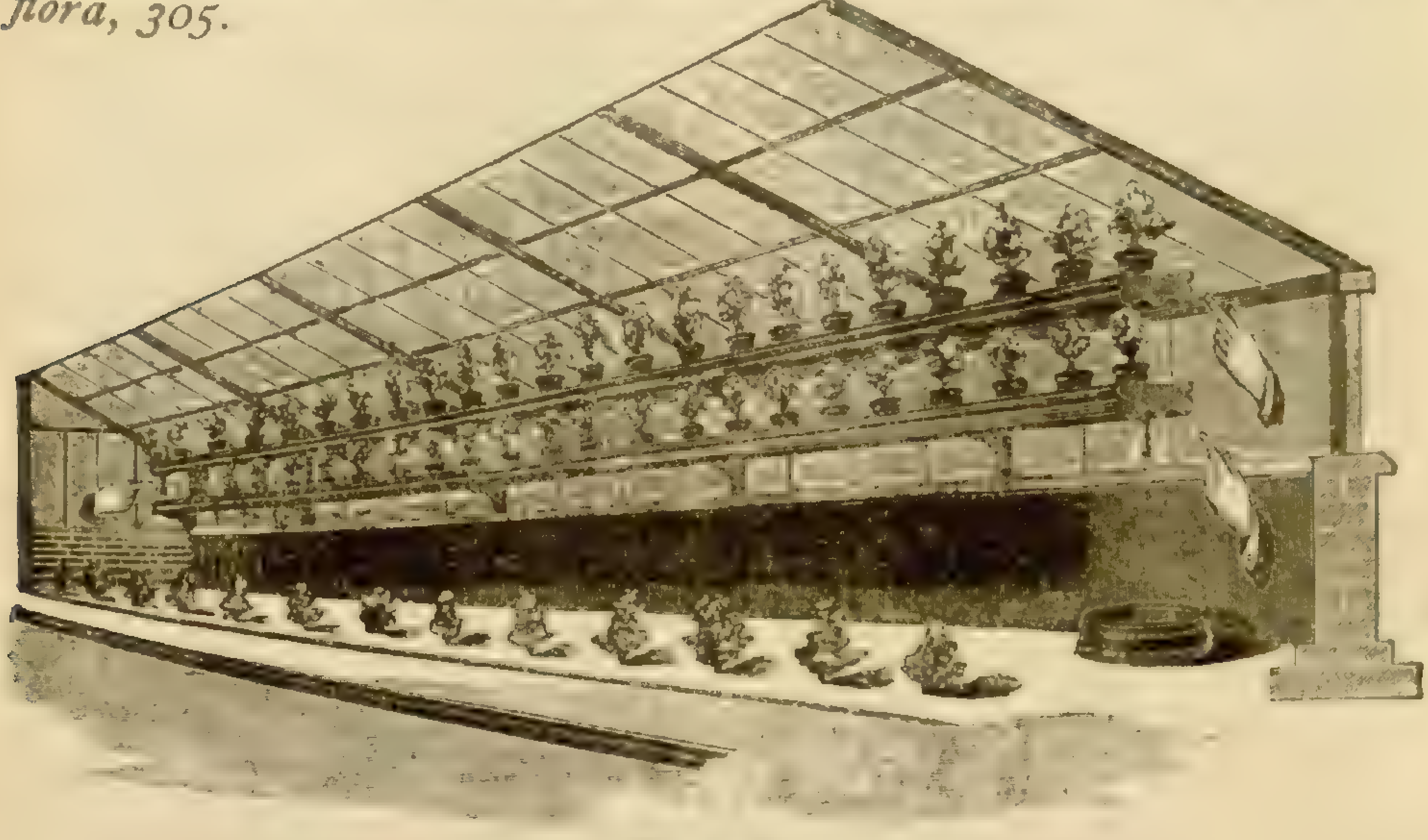


FIG. 62.

SELF-WATERING SHELF.—(Figs. 62, 63.) The shelf consists of a metal trough with a corrugated bottom. The water, which is introduced by means of a hose, is distributed throughout the pots by capillary attraction. Fig. 63 is a detail of the shelf.—*The Gardener's Chronicle, xii. 285.*

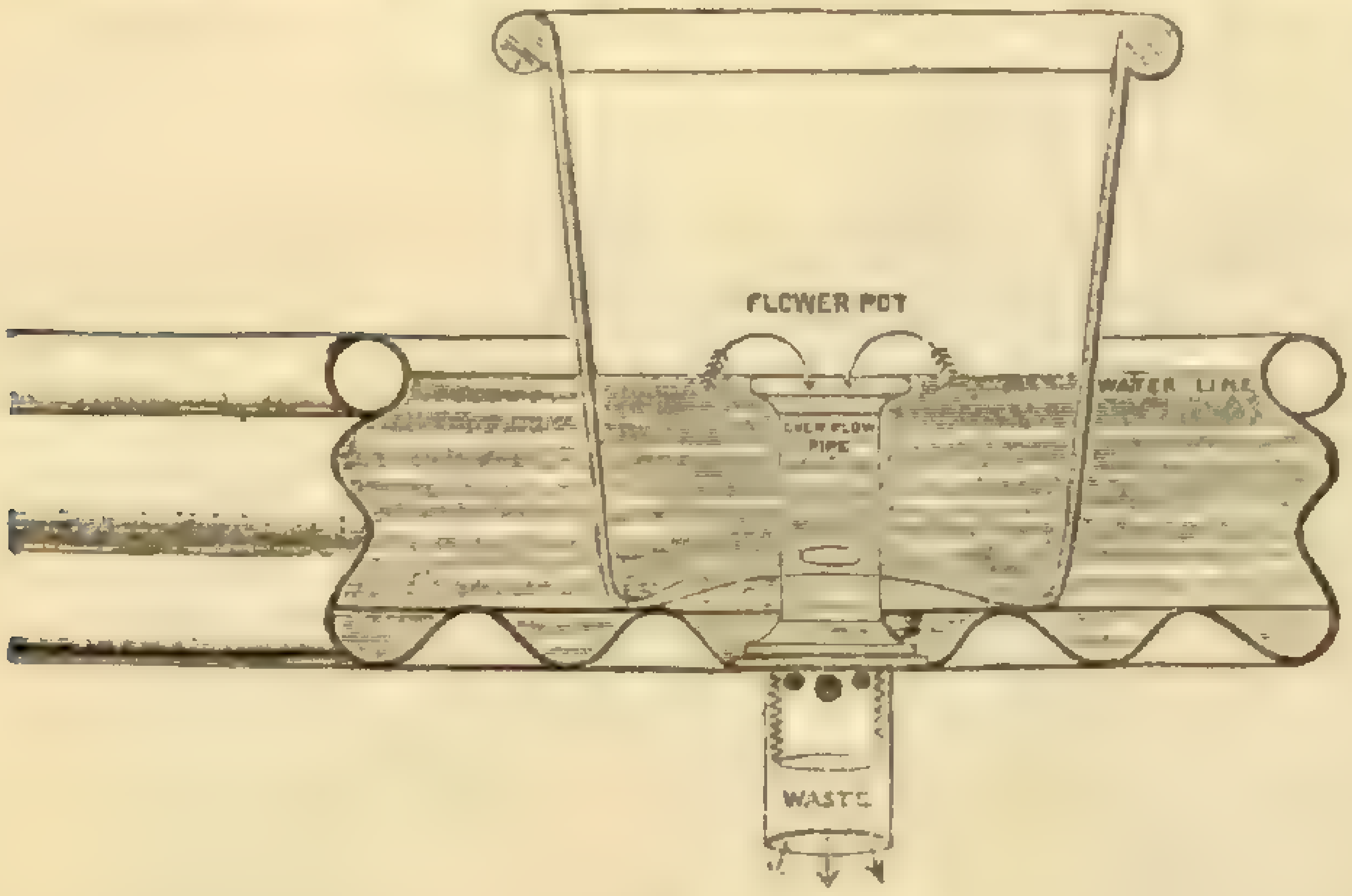

FLOWER POT
WATER LINE
OVERFLOW PIPE
WASTE

FIG. 63.

FLOWER POT WITH WATER-RESERVOIR.—(Fig. 64.) The pot is made of clay. The lower part consists of a deep vessel capable of holding water. The upper part is shaped like an ordinary flower pot, but the sides are extended

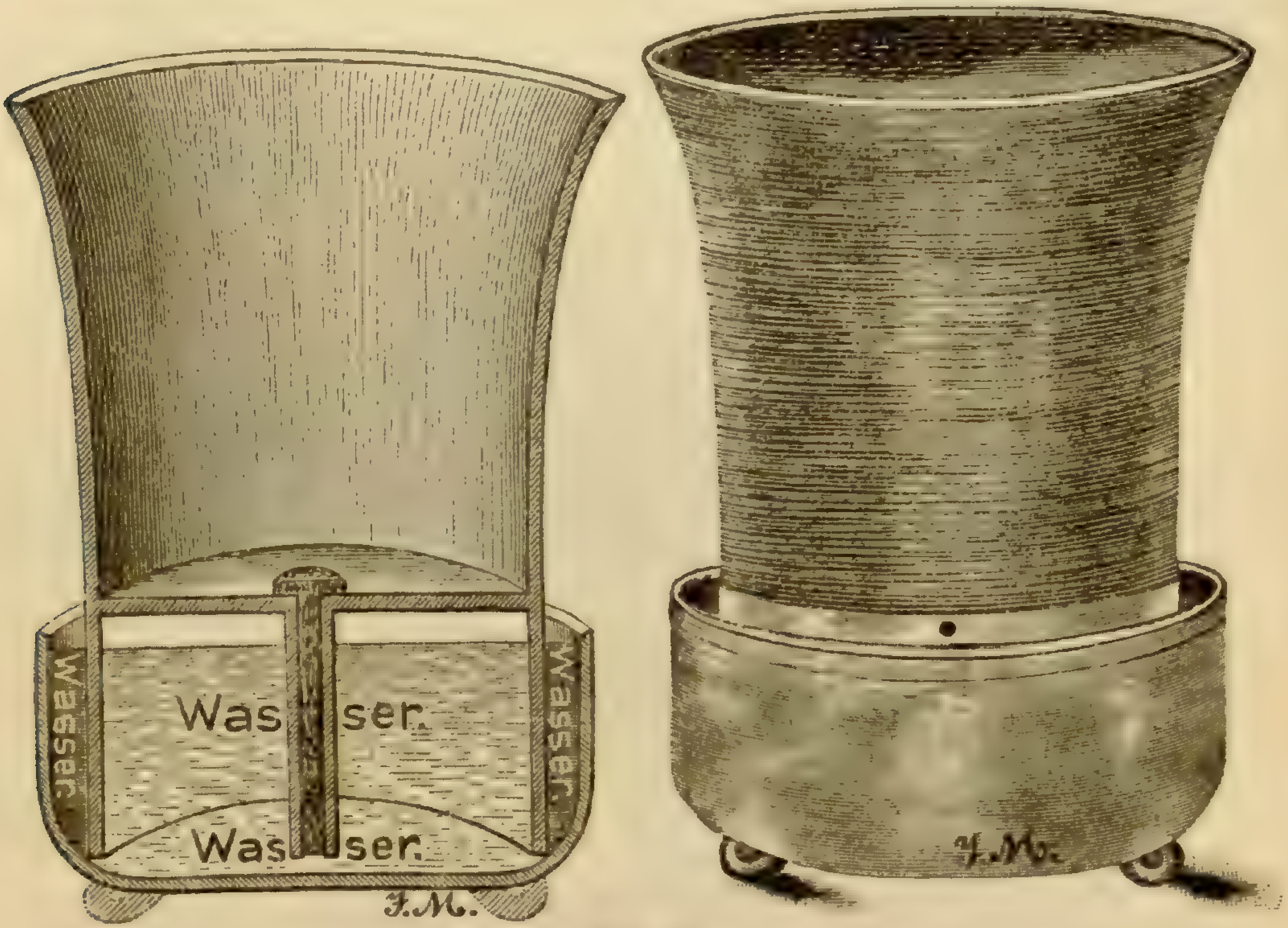
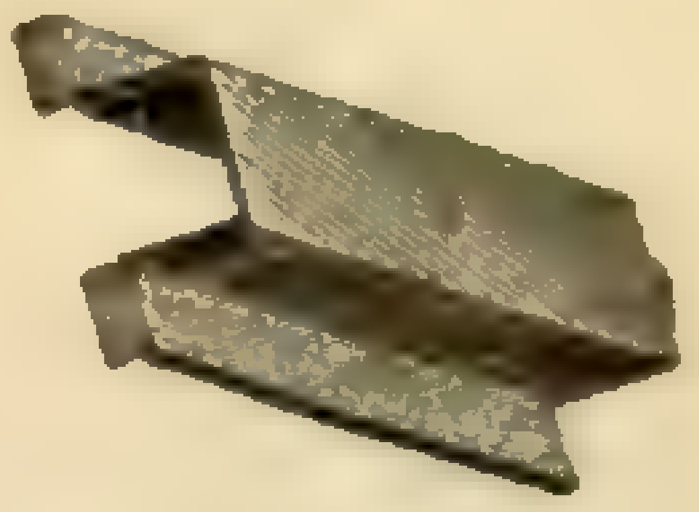

Wasser.
Wasser.
Wasser.
Wasser.
F.M.
F.M.

FIG. 64.

downwards, so that the bottom of the pot stands a little higher than the reservoir when put in position. The water is drawn up by means of a sponge or some similar material which is placed in the tube leading from the bottom of the pot to the bottom of the reservoir. Unless the tube is made quite small, too much water will be drawn up.—*R. Betten, in Der Praktische Ratgeber im Obst-und Gartenbau, 63.*



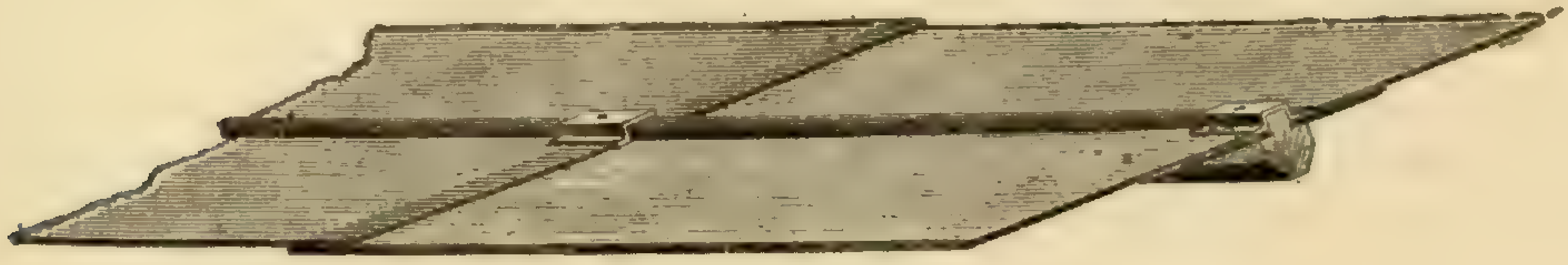


FIG. 65.

GLAZING.—(Fig. 65.) The new clip, made of zinc, for use in glazing all kinds of horticultural structures, dispenses with the use of top putty, saves expense in the first cost of labor, and time in the making of repairs afterwards. The smaller illustration given shows the clip; the larger one the manner in which the clip is used to hold the panes down upon the thin layer of putty underneath, and the stops to keep them in position. The clip itself is fixed to the sash-bars by means of a brass screw or tack. The special advantages claimed by the inventor, are a saving of 50 per cent. in the time required in glazing; no breakage from contraction or expansion; the easy replacement of panes broken by accident; and the prevention of loss of heat by the close lapping of the glass which this system of glazing permits.—*Gardening World.*

TO KILL GREEN-FLY.—Take a 6-inch flower pot, enlarge the hole to an inch in diameter, make a supporting wire frame with a handle over it like a bucket and which will raise it about an inch from the floor. Chop tobacco stems an inch or less long, dampen them a little, and fill the pot. Light through the hole in the bottom. It gives no flame, and burns very slowly. *Ex.*

COOL CALCEOLARIA BENCH.—The bench has a double bottom, there being a space of about fifteen inches. In this bottom ice is placed on moss, and this keeps fhe young plants above sufficiently cool to enable them to endure the hot weather. The ice is inserted through a door in the side, next the walk.—*John Thorpe.*

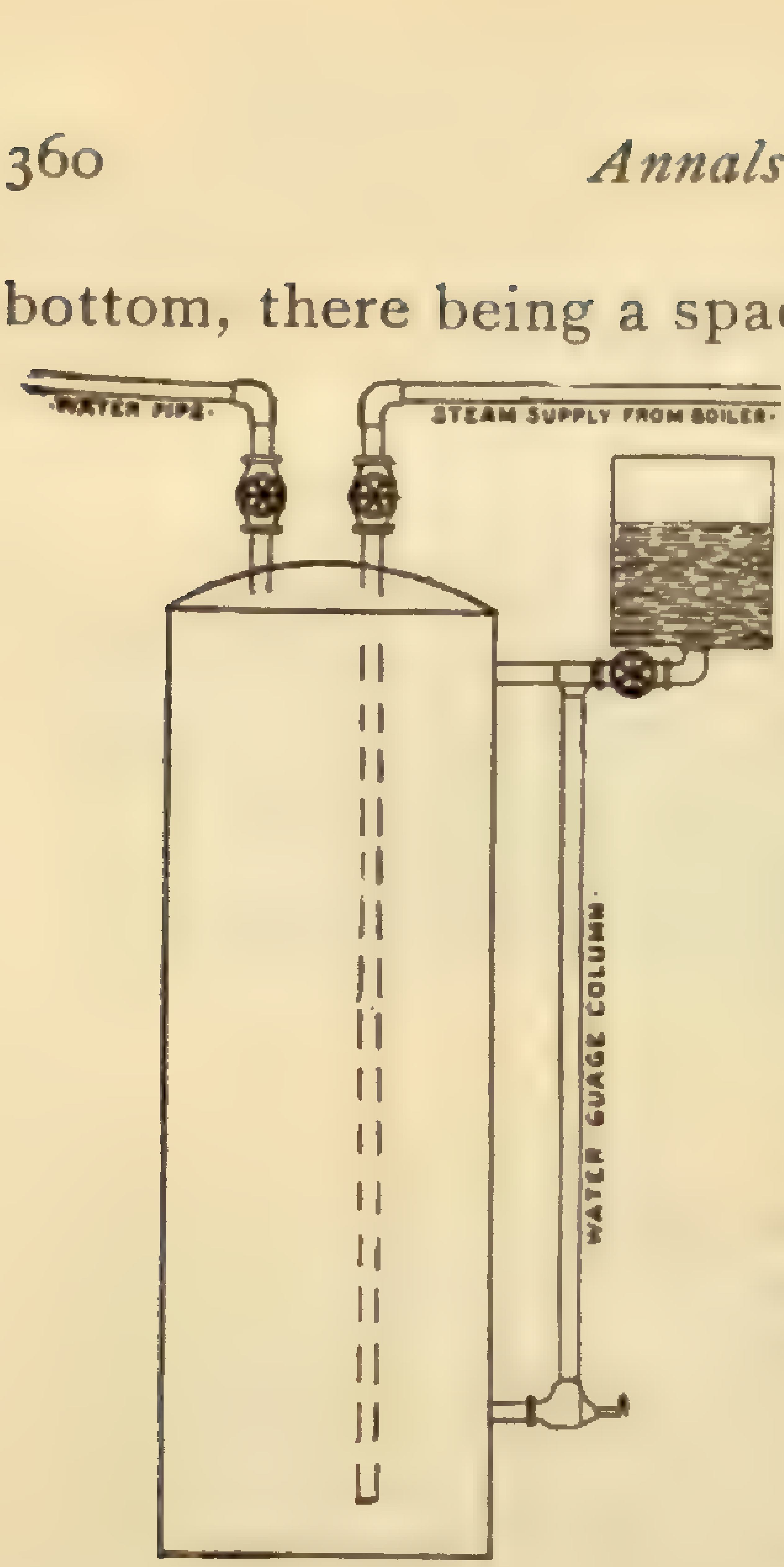


FIG. 66.

APPLYING TOBACCO JUICE.—(Fig. 66.) A cylindrical tank, holding 50 gallons, is connected with ¾-inch steam pipe directly from the boiler, and also with the ordinary watering pipe system. There is an XL valve on each of these pipes; at one side is a small tank, holding five or six gallons, of tobacco extract, and below it is a water guage column to show the hight of water in the cylinder. When tobacco juice is required, let a gallon of the extract into the cylinder. Close the water pipe valve but open the steam valve. In a few minutes the material will boil. Then open the water-pipe valve, and the juice will traverse the whole system and can be drawn and sprayed from every hose-bib.—*C. Rayner, in American Florist,* 756.

HOME-MADE SPRAYER.—(Fig. 67.) Made from an oil-can. A rubber hose is attached at F. G is a nozzle; it is a copper tube with a screw, H, dropped into the small end and soldered

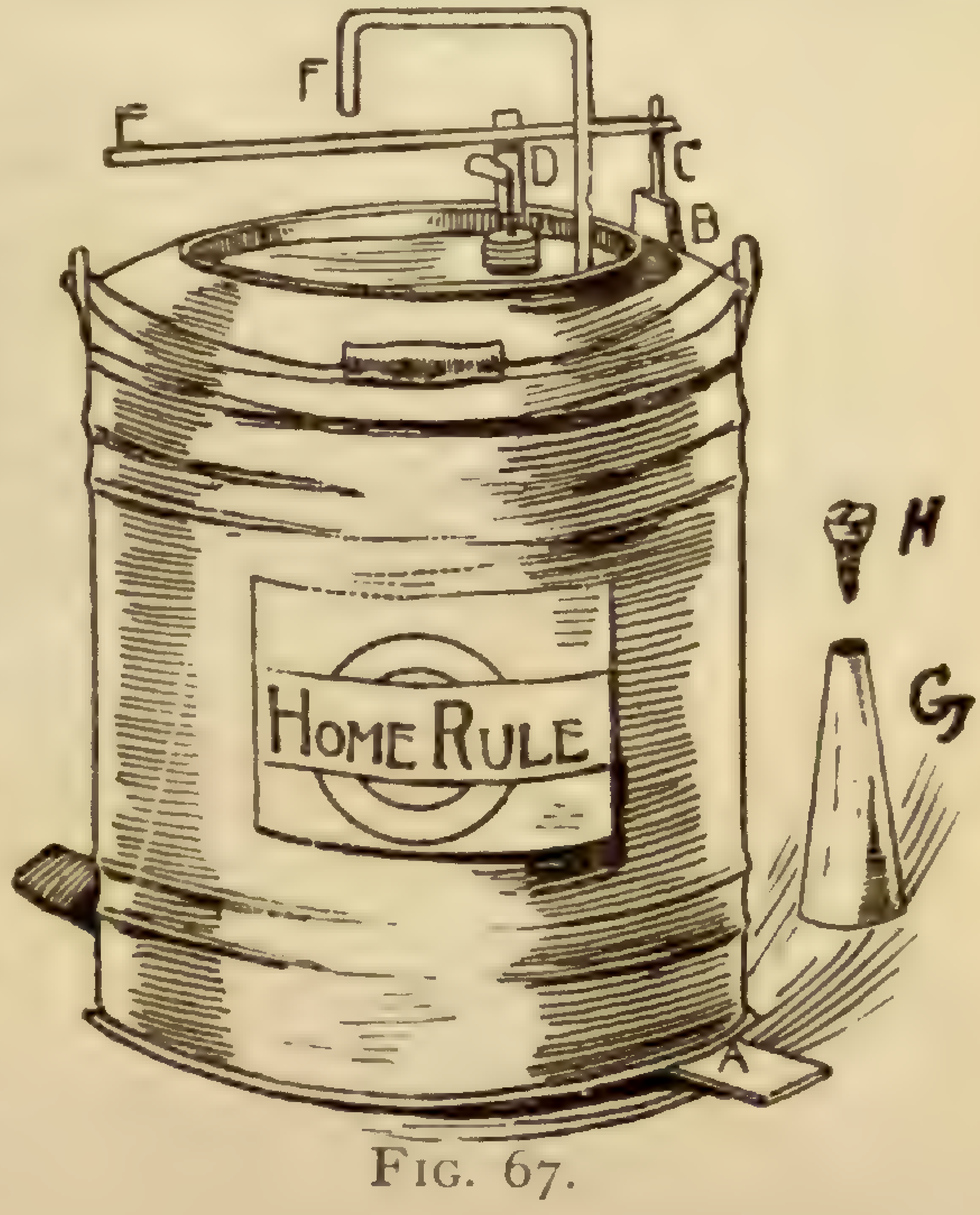


FIG. 67.

fast three-fourths around the end. The board, A, is nailed into a wheelbarrow. E is the pump handle. The piston works through the oil-hole at D.—*C. H. F., in Rural New-Yorker, 701.*

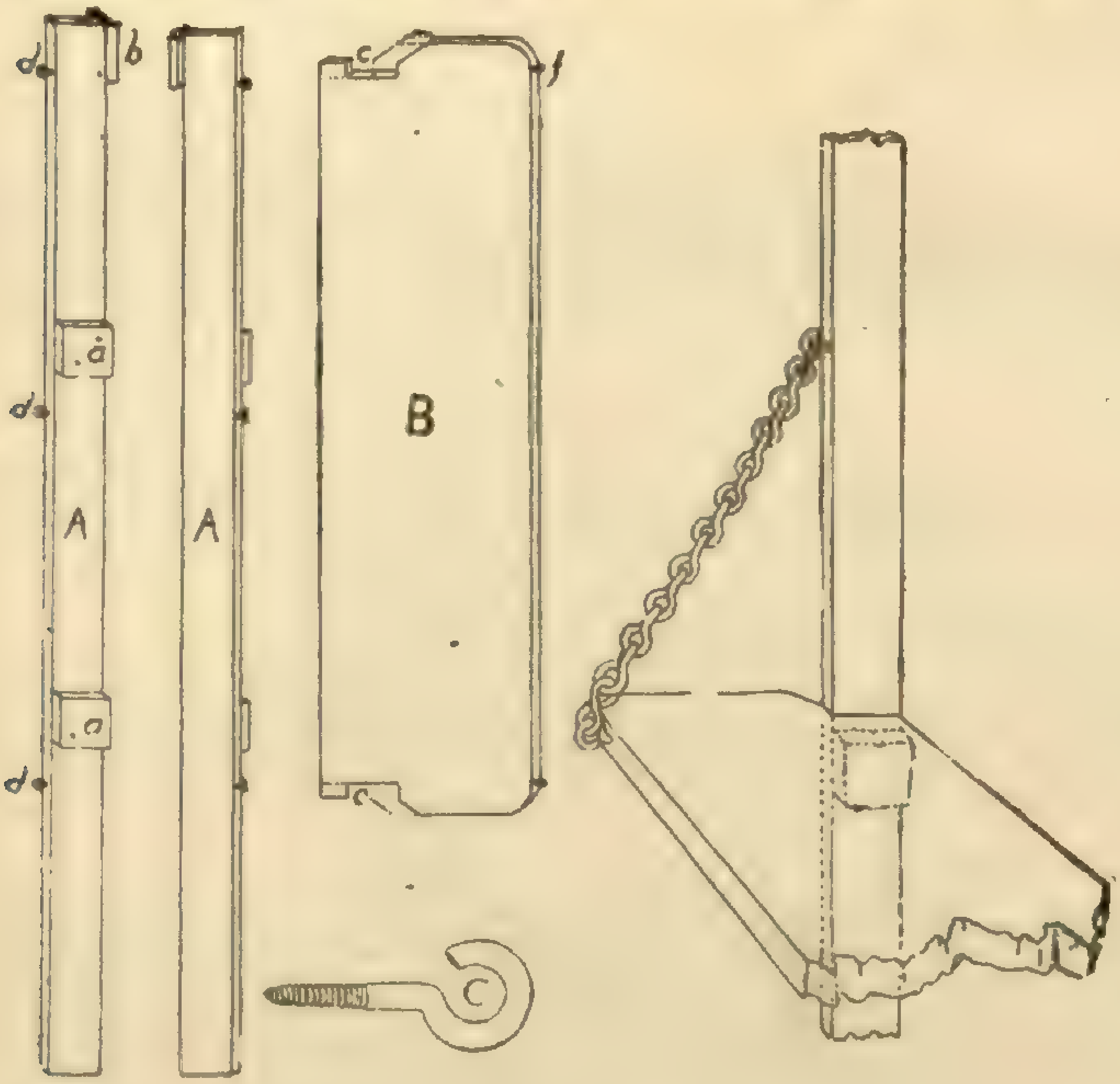


Fig. 68.

WINDOW SHELVES.—(Fig. 68.) The uprights, *A A*, are strips two inches wide and as high as the window. The shelves rest upon the blocks, *a a*. A cleat, *b*, is fastened at the top and rests in the sash groove, to prevent the shelves from tipping out. *B* is a shelf 8 inches wide. The shelf is held in place by chains which are fastened at each end by screw-eyes. The screw-eyes are fastened at *d d d* in the upright *A*.—*J. Marion Shull, in Rural New-Yorker, 74.*

FALCONNIER BRICKS MADE OF BLOWN GLASS.—Mr. Falconnier, of Nyon, Switzerland, has recently invented a hollow glass brick. The bricks are blown in the same manner as bottles, but the opening is closed, thus imprisoning the air. These bricks are very poor conductors of heat, and afford excellent protection against the heat of summer as well as the cold of winter. They are very strong and durable. They are made 20 centimeters long, 14 centimeters wide, and 115 millimeters thick. They are laid with fine mortar, and a wall composed of them allows the passage of considerable light. Glass bricks have been used in the construction of a greenhouse in the Park Tete d'Or, of Lyons, France, with very satisfactory results. The price of the bricks is at present too high to allow of their general use; they sell for 24 fr. per 100, about 50 being required per square meter. They are also used for roofs.—*Revue Horticole, 230.*

Heating Hot-Beds.—(Fig. 69.) The engraving shows a method of heating a hot-bed by means of a hot-air flue from a furnace or stove. A rude fire-place will answer. A board shield under the bed will distribute and equalize the heat. Give the flue a rise of 9 inches in 50 feet.—*Elmer E. Summey, in Rural New-Yorker, 139.*

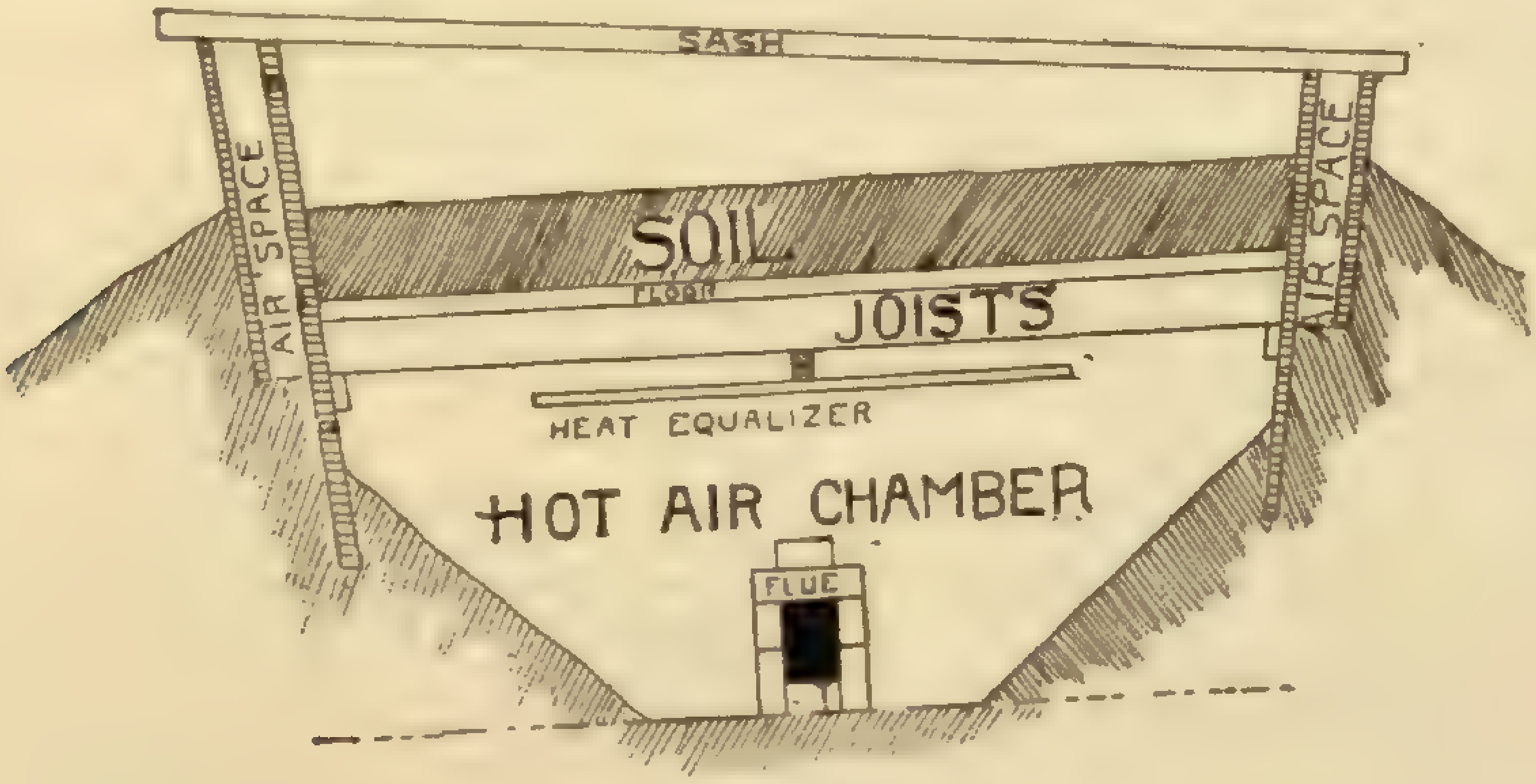

SASH
AIR SPACE
SOIL
AIR SPACE
FLOOR
JOISTS
HEAT EQUALIZER
HOT AIR CHAMBER
FLUE

Fig. 69.

§ 12. *Necrology of 1892.*

IN AMERICA.

ANTHONY B. ALLEN, founder and first editor of *The American Agriculturist*, died at his home at Plainfield, N. J., January 12, at 90 years of age.

⁂

F. W. ANDERSON, a well known botanist, and assistant editor of *The American Agriculturist*, died December 22, 1891. He was born in England in 1866, and first became known as a botanist in Montana. He later came under the employment of the Department of Agriculture, and was for a time associated with J. B. Ellis in the preparation of plates for the latter's work upon American fungi.

⁂

P. M. AUGUR, State Pomologist of Connecticut, died July 14, 1891. The nursery business with which he was connected is now conducted by P. M. Augur & Sons.

⁂

CHARLES EDWARD BART, of the fruit house of C. Bart & Co., Charleston, S. C., died toward the latter part of the year, at 34 years of age.

⁂

JOHN BURR, originator of many new fruits, died December 13, at Leavenworth, Kan., in his 93d year. He was born in Bridgeport, Conn. When about 36 years old he removed to Columbus, Ohio, where he lived for 20 years. While here he introduced Burr's New Pine and Burr's Old Seedling strawberries. In 1858 he removed to Kansas. Mr. Burr gave particular attention to grapes, especially desiring early varieties, and he originated, among others, Early Victor, Standard, Jewel, Paragon and Ideal.

ANTHONY COOK, JR., a well known florist of Baltimore, died in that city Saturday, December 31, 1892, of pneumonia, aged 48 years. Mr. Cook had given special attention to the carnation.

⁂

HENRY CURRIER, of the fruit firm of H. Currier & Co., Boston, died at Somerville, Mass., October 4. He was born at Walden, Vermont, September 26, 1818. He was one of the oldest and best known merchants of the Boston fruit trade.

⁂

P. C. DEMPSEY, a well known Canadian horticulturist, died August 27. He originated, among other varieties, the Trenton apple and Dempsey pear.

⁂

JAMES C. DUFFEY, assistant in horticulture in the Missouri Botanical Gardens, died near the close of the year at St. Louis. Mr. Duffey had been assistant in horticulture in the South Dakota Agricultural College, and had refused a full professorship there. He graduated from the Michigan Agricultural College in 1887. Mr. Duffey was born in 1860 in Pennsylvania. At St. Louis he had entered upon his work with zeal, and had begun to attract the attention of the horticultural and entomological world.

⁂

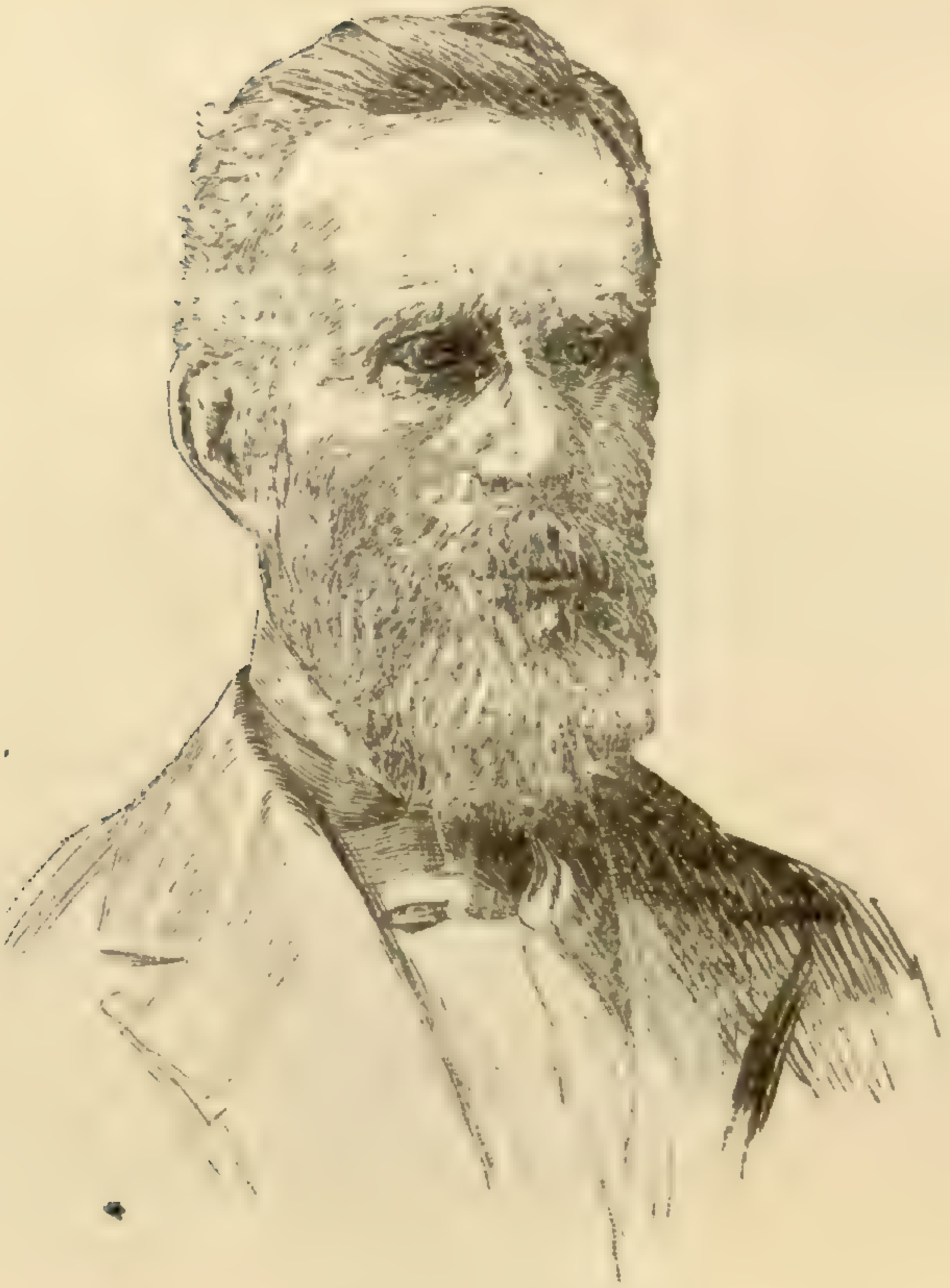
ORRIN P. FORD died in Boston, October 3. Mr. Ford was a member of the fruit firm of J. F. Kimball & Co., and a prominent man in the trade of that city.

⁂

DR. ALLEN FURNAS, one of the most influential horticulturists of Indiana, died during the year.

⁂

W. J. GORDON, owner of the well known Gordon rose houses at Glenville, O., died November 23. A part of his great fortune is left for the maintenance of Gordon Park, a beautiful pleasure ground which he gave to the city of Cleveland.



JOSEPH HARRIS.

Joseph Harris died at his home at Moreton farm, near Rochester, N. Y., November 18. Mr. Harris was for many years one of the most prominent agricultural writers in America. He was always a man of sound and original views, and one who commanded universal respect. His "Walks and Talks on the Farm," serial editorial contributions to *The American Agriculturist*, were perhaps the most popular farm papers ever written in this country. He was particularly fond of horticultural operations, and was a successful fruit grower and vegetable gardener. For several years prior to his death he was in the seed business, and issued a neat and useful catalogue. The following sketch is prepared for this occasion by his widow, Sarah A. Harris:

"Mr. Harris was born in 1828 at Shawbury, Shropshire, England. He came to this country in December, 1849. For two years previous he had studied at Rothamstead, and assisted in making some famous experiments in feeding sheep, which, I believe have never been repeated. Soon after coming to Rochester, he began writing for the agricultural press, at first, I think, for *The Genessee Farmer*, then owned by Mr. Lee, afterwards for *The Rural New-Yorker*, then for *The Country Gentleman.* He bought *The Genesee Farmer* about 1855, I think, and sold it to *The American Agriculturist* in '66 or '67. *Walks and Talks on the Farm* were continued in that paper for about 10 years. Since then he has written almost constantly, but no series of articles like the *Walks and Talks.* Lately Mr. Harris has written almost entirely on the use of nitrate of soda. A pamphlet which he wrote in competition for a prize offered in Germany was published by the Nitrate Committee of Iquique, Chili, three years ago. His books are: One *On Manures*, one *On the Pig*, *Gardening for Young and Old*, and *Nitrate of Soda.*

"Mr. Harris' interest in horticulture and agriculture continued to the end. Until within a few days of his death, when he became too deaf to listen to reading, he had all the agricultural and horticultural papers read to him each week. Mr. Harris made some very careful experiments on sorghum in 1862, which I believe, were never published."

THOMAS HOGG.

"Thomas Hogg, for many years one of the best known and most highly respected among the horticulturists and botanists of the country, died suddenly of angina pectoris on the 30th of December, in this city [New York]. His father, whose name was also Thomas Hogg, was ardently devoted to horticulture, and had charge of the greenhouses belonging to William Kent, Esq., of London, who had the largest private collection of plants then in England. In this situation he became intimate with Macnab, of Edinburgh; Aiton, of Kew; Pursh, Goldie, Don and other collectors of note. Thomas Hogg, the younger, was born in London on the 6th of February, 1820, and was brought to this country by his father when only nine months old. In the spring of 1822, Thomas Hogg, senior, took a piece of ground in this city where Twenty-third street and Broadway now meet, but which was then quite out of the city, and commenced business as a nurseryman and florist, the only other nurseries then about New York being those of Messrs. Prince, of Flushing, and Floy and Wilson, in this city. In 1840 the nurseries where removed to Seventy-ninth street and the East river, and here young Thomas Hogg and his brother James, who had been brought up to the business, assisted their father, and took charge of the very flourishing establishment at his death in 1855. In 1862 Thomas Hogg received an appointment from President Lincoln as United States Marshal, under which he went to Japan, where he remained eight years. He then resigned, and after a short visit to America, he returned to Japan late in 1873, and remained there for two years longer in the customs service of the Japanese government. His close relations with the authorities gave him opportunities for exploring the islands which other foreigners did not possess, and he collected many plants and seeds of horticultural value and sent them home. These introductions made Mr. Hogg eminent among collectors of garden plants. The garden of his brother, at the foot of Eighty-fourth street, in this city, where most of these treasures were cultivated for the first time in America, was, for many years, the most interesting spot in the United States to lovers of Japanese plants. Many of the very best trees, shrubs and herbaceous plants, which have come to us from Japanese gardens, were those brought to America before they were sent to Europe, and not a few of them are now among the most familiar inhabitants of our gardens. In 1875, Mr. Hogg left Japan the second time, and afterward traveled through China, Ceylon, South America and Central America. Later in his life he went to California, and to Europe several times. His last journey to Europe was made two years ago, and while in Paris during an exceptionally severe winter he was attacked by the influenza, and never fairly recovered from its effects.

"During the latter years of his life Mr. Hogg was engaged in no business, and devoted his leisure to his favorite studies. His investigations took a wide range, and he was recognized as an authority in many branches of horticultural science and practice. In person Mr. Hogg was tall and spare, but well knit and muscular, with a strong but refined face, and great dignity and gravity of manner. He was almost shrinkingly modest, but in congenial company was one of the most agreeable of companions. He was never married, but was singularly devoted to his sister and brother and the members of their families. His integrity was above any suspicion; and the purity, sincerity and unselfishness of his life commanded the respect and won the affection of every one with whom he came in contact."—*Garden and Forest.*

The portrait is made from a photograph furnished for this volume by a niece of Mr. Hogg, Mary E. Sparks, who pronounces the likeness to be a good one.

SIDNEY S. JACKSON, one of the oldest horticulturists in the United States, died at his home in southern Ohio, March 17, in the 90th year of his age. From an account of the celebration of the 65th wedding anniversary of Mr. and Mrs. Jackson, in 1891, published in the *Cincinnati Gazette*, the following history is obtained:

> "Mr. Jackson's father had emigrated to Ohio in 1813 from New York city, and settled on three quarter sections in Green township, of which the present homestead is a part. Here the young couple also settled. They were criticised by envious neighbors because Mr. Jackson had built a house of hewn logs, a mark in those days of aristocracy. Here, with the exception of a few years' residence just south of the homestead on the Ohio river bank, Mr. and Mrs. Jackson spent all their married life. Mr. Jackson is the oldest nurseryman and florist in the United States. Prior to the war he had a large trade in the south. He bears the distinction of first introducing the rhubarb plant into the Cincinnati markets. He was also one of the originators and charter members of the Ohio Horticultural Society, which dates its inception back to the forties.
>
> "Mr. Jackson works daily about his nursery, and has a thoroughly equipped workshop, where he has perfected a number of inventions. One room of the home is devoted to valuable relics of former times, not the least interesting of which are: A half-bushel measure used by Mr. Jackson's father while in trade in Philadelphia, and which bears in its bottom the seal of Benjamin Franklin, and a city directory of Philadelphia, dated 1785, when the population was only about 6,000, nine of whom were John Smiths. One familiar entry is, 'Benjamin Franklin, His Excellency, No. 1, Franklin's Court.'"

⁂

ORANGE JUDD, senior editor of the *Orange Judd Farmer*, Chicago, formerly editor of *The American Agriculturist*, and for several years the president of the publishing firm of Orange Judd & Co., died at Chicago December 27, 1892. Orange Judd was born near Niagara Falls, N. Y., on July 26, 1822. He was graduated at Wesleyan University in 1847. After teaching until 1850, he studied analytical and agricultural chemistry at Yale. He became editor of *The American Agriculturist* (New York) in 1853, and in 1856 its owner and publisher. He was also agricultural editor of *The New York Times* from 1855 to 1863. In 1857 he sent to Europe and imported a quantity of sorghum seed, which he distributed free He was the principal member of the firm of Orange Judd & Co., which published agricultural and scientific works, and *Hearth and Home*, and later he was president of the Orange Judd Company for some years. In 1863 he served with the Sanitary Commission at Gettysburg, and then with the Army of the Potomac from the Rapidan to Petersburg. In 1868 and 1869 he was president of the New York, Flushing and North Side Railroad, and of the New York and Flushing Railroad. In connection with Conrad Poppenhusen, he projected the network of railroads now covering Long Island. In 1883 Mr. Judd retired from the presidency of the Orange Judd Company, and was succeeded by his brother, David W. Judd. For some years previous he had been only nominally connected with the company. In 1870 he gave $100,000 for the Orange Judd Hall of Natural Science at Wesleyan University, and contributed largely to the building of churches and Sunday-schools, and to other philanthropic enterprises. In 1884 Mr. Judd established the Orange Judd Farmer Company, in Chicago. Mr. Judd wrote much for the press, notably his own journals. In 1862 he originated a series of Sunday-school lessons for every Sunday in the year, upon which the later Berean and International lessons were modeled.

⁂

WILLIAM R. KING died November 17, on the Bluefields river, Nicaraugua. He had but recently gone to the tropics for the purpose of establishing a nursery and fruit plantation. He had prepared himself thoroughly for the undertaking by work in the Division of Pomology of the Department of Agriculture, and by spending a year in the nurseries of R. D. Hoyt, of Seven Oaks, Florida. Mr. King was born at Yellow Springs, Ohio, 24 years ago.

⁂

DAVID McDONALD, a florist of Philadelphia, of Scotch birth, died September 7.

⁂

F. T. McFADDEN died in August, at his home near Cincinnati. He was favorably known in recent years as a greenhouse builder, and for many years as an appreciative admirer of horticultural pursuits. He was connected with journalism for a time. He was 50 years of age, and was born in Zanesville, Ohio.

⁂

D. D. T. MOORE, founder and first editor of *The Rural New-Yorker*, died June 3. He was born in 1820, at Marcellus, N. Y. He founded the *Michigan Farmer*, and was later an owner in the *Genesee Farmer*. January 1, 1850, he founded Moore's *Rural New-Yorker*, in Rochester. The paper was moved to New York in 1868, where it soon began to decline in circulation. In 1876, it was sold to G. A. C. Barnett, publisher, A. S. Fuller, editor, and E. S. Carman, associate editor. Shortly after, Mr. Carman bought out his partners. Mr. Moore continued in various journalistic work until enfeebled by impaired health.

⁂

L'ABBE LEON PROVANCHER died at 72 years of age, at his home near Quebec. He was educated for the ministry, but early resigned its duties, because of feeble health, and devoted his life to scientific studies and writings. He was best known as an entomologist, and edited twenty volumes of *Naturaliste Canadien*. He published two botanies, one being *Flore du Canada*. He also wrote *Le Verger*, a small book upon the fruits and vegetables adapted to the climate of Quebec. Provancher was born near Quebec. He once made a journey to Jerusalem and once to the West Indies, of both of which he has left accounts. He was the most conspicuous of French-Canadian naturalists.

⁂

CHARLES REISSIG, a prominent Chicago florist, died February 24. He was born August 20, 1818, at Hamburg, Germany. He first began the trade of a boilermaker. In 1836 he went to Rio Janeiro as a boilermaker for the government. This position he filled for two years. Then for two years he was employed in the navy yards, and for five years thereafter was in the employ of the Brazilian Steam Packet Company. In 1845 he came to New York, and soon settled in Chicago. Two years later he opened a steam boiler and engine factory, and built up a large business. In 1869 he disposed of his business and became a commercial florist. His first greenhouse was built in 1856. He opened a flower store in Crosby's Opera House, which he continued until wiped out by the fire of 1871. He subsequently opened important flower stores in various parts of the city. He retired from active business, July 1, 1891, but he grew orchids and palms for his own pleasure till the last. Mr. Reissig was a successful man of affairs, and was held in great esteem by everyone.

DR. T. G. RICHARDSON, one of the best known and most ardent amateur horticulturists of the south, died at his home in New Orleans on May 25. He had introduced a large and valuable collection of hardy and half hardy plants, including many palms.

⁂

JOHN A. SALZER, seedsman, of LaCrosse, Wis., died January 22, in his 69th year. Mr. Salzer was born in Dettinger, Germany. He came to America when 23, and settled at Galena, Ill. His father was a nurseryman, and the early training of the son determined his choice of greenhouse work, which he undertook at LaCrosse in 1866, and which was the foundation of his seed business. The John A. Salzer Seed Company was incorporated in 1886. Mr. Salzer was a benevolent man, his gifts including bequests to an orphan asylum, a home for the aged, and various charities connected with the Methodist church. Four sons and three daughters survive him.

⁂

H. G. SCHABACKER, senior member of Schabacker Bros., fruit dealers of Erie, Pa., died October 8.

⁂

J. AUSTIN SCOTT, one of the oldest fruit growers of the central states, died July 25, at his home, Ann Arbor, Mich. The following sketch is adapted from the *Allegan* (Mich.) *Gazette*:

"Mr. Scott was born at Ridgefield, Fairfield county, Conn., April 13, 1806 his ancestors having lived at that place for three generations. He was a graduate of Yale college, and was engaged in several vocations until 1833, when he moved to Perrysburg, O., where he purchased a paper called the *Miami of the Lake*, the first newspaper published in that vicinity. He held a captain's commission from Governor Lucas, and shared in the perils of the 'Toledo war.' In 1837, when the panic struck this country, he was building a boat, the Chesapeake, which cost $68,000, and the panic ended in his being able again to start at the bottom toward making a fortune. He was engaged most of the time during the next twenty years in fruit farming. In 1859 he moved to Toledo in order to give his children a better education. He was a member of the school board of that city for several terms, and assisted greatly in developing the school system. In 1868 he moved to Ann Arbor, and has lived since that time in his magnificent home in that city. He was an active, enterprising citizen, and was engaged in many of the manufacturing interests in this city. Mr. Scott was one of the original founders of the Republican party, and was a delegate to the convention which nominated William Henry Harrison. Four children survive him—

Austin Scott, president of Rutgers college, New Jersey; Evart H. Scott, manufacturer and fruit grower, and Ranney C. Scott, of Ann Arbor; Mary H. Carter, wife of Chas. L. Carter, of Honolulu, Hawaiian Islands.

"At the time of Mr. Scott's death he was president of the Washtenaw County Horticultural Society, as he had often been before, and was, we believe, its founder. He was a man of rare grace and grandeur of character, who drifted peacefully out from earth, a gentle and noble spirit fit for the richest blessings of eternity. He grew old gracefully, and blessed with his cheery, benevolent face every fellow-being who beheld it."

⁂

B. G. STABLER, Marysville, Cal., died near the close of the year. He was prominent in the horticultural interests of his region. He was 58 years of age.

⁂

JAMES TAPLIN, a prominent florist, died January 9, at his home in Maywood, New Jersey, in his 61st year. Mr. Taplin was born at Ludlow, in Shropshire, England. He was at one time gardener to the Duke of Devonshire at Chatsworth, succeeding Sir Joseph Paxton, and was a frequent exhibitor beford the Royal Horticultural Society, from which he received a medal. He came to America in 1864 for Mr. George Such, whose establishment at South Amboy, N. J., was a few years ago the most famous in the country. Some 14 years before his death he bought the property at Maywood, which soon became noted for its fine plants. Mr. Taplin was a frequent and facile contributor to the press. Two sons and a daughter—Mrs. Emily Taplin Royle—are well known in floricultural circles.

A portrait of Mr. Taplin appeared in *American Florist*, January 21, 1892.

⁂

SERENO WATSON, curator of the herbarium of Harvard University, and successor to Asa Gray in the preparation of the Synoptical Flora of North America, died March 9. He was born, December 1, 1826, in Connecticut. His early life, after graduating from Yale, was spent in various pursuits. About 1868 his work as a professional botanist began by his joining King's survey in the west. His contributions to American photography were numerous and valuable.

⁂

GODFREY ZIMMERMAN died at his home near Buffalo, N. Y., June 29. He was born in Alsace in 1815. He founded Pine

Hill nurseries, near Buffalo, in 1840. He was long a prominent horticulturist in western New York.

ABROAD.

JOHN ALLEN, for 50 years head gardener of the Tregothan Gardens, England, died May 5, aged 85 years.

⁂

M. BALANSA, an indefatigable explorer and collector, died recently at Tonkin. He had traveled in almost all parts of the world, and had enriched many herbaria. He was the author of a work on the Gramineæ.

⁂

R. BULLEN, curator of the Glasgow Botanical Gardens, died in October. He was particularly successful in the cultivation of orchids.

⁂

GEORGE BOND, gardener to the Earl of Powis, Lydbury, North Shropshire, England, died August 16, at 86 years of age.

⁂

ELIE CHRISTACHI, a French horticultural writer residing in Turkey, died at Constantinople, aged 64 years. He did much to introduce French horticulture into Turkey.

⁂

EDMUND COLE died May 9, aged 52. He was a well known English gardener, and in 1882 introduced the Cole's Favorite potato, which is now extensively grown.

⁂

E. COOPER, gardener to the Right Honorable Joseph Chamberlain, of Birmingham, England, died May 2.

⁂

CAMILLE DEPRET, a well known horticulturist of France, died in June.

⁂

JOHN DOWNIE, one of the most esteemed horticulturists of Scotland, died November 25, aged 80 years. He was considered an authority by the nurserymen and gardeners about

Edinburgh, and his loss will be particularly felt by them. He was very skillful in raising flowers under glass. In 1858 he exhibited in London the first race of fancy pansies. Mr. Downey was a prosperous nurseryman and seedsman, and for many years belonged to the firm, Downie, Laird & Laign. He was also one of the founders of the Scottish Horticultural Association.

⁂

JOSEPH ELLAM, died during the year at Oxford, England. He was at one time head gardener at Bodorgan, and afterwards had charge of the gardens at Cliveden.

⁂

OTTO EICHLER, royal gardener at Grünberg, Germany, died October 30, aged 89 years.

⁂

DR. THEODOR ENGELBRECHT, one of the foremost pomologists of Germany, died August 4, aged 79. He was by profession a physician, but all his leisure was given to the cultivation of fruits. He did much to further the interests of Braunschweig in particular, and it was largely through his efforts that the State Pomological Institute was located there. He was a member of several horticultural societies, and had received many honors from them as well as from the state.

⁂

SAMUEL FARQUHAR died at the age of 86, on September 12, at Aberdeen, Scotland. For 52 years he was head gardener at Dunecht House, near Aberdeen.

⁂

W. H. FITCH, the celebrated botanical artist, died at Kew, January 14. Future generations will become familiar with his name through the many exquisite plates to be found in such works as *The Botanical Magazine, Hooker's Icones Plantarum, Himalayan Plants,* and many others.

⁂

M. FORNEY, professor of arboriculture at Paris, died during the summer. He is the author of *La Taille des Arbres Fruitiers.*

⁂

THOMAS GREEN, inventor of the lawn mower, died April 19, aged 81 years, at Leeds, England.

William Heale died December 8, at the age of 84 years. He was for many years a nurseryman and seedman at Devizes, England, and in his younger days was much interested in growing roses and dahlias.

⁂

R. S. Holford died February 23, aged 84 years. He was an English authority in all that pertained to the art of landscape gardening, his own grounds being a wonderful example of the results which may be achieved even under the greatest difficulties.

⁂

Philippe Janssens, for the past forty-two years treasurer of the Royal Linnæan Society, of Belgium, died December 22, 1891, aged 64 years.

⁂

Pierre Joigneaux, founder of the school of horticulture at Versailles, France, died January 26, aged 77. He was one of the foremost French horticulturists of the day, and was widely known by his writings. He is the author of *Causeries sur l'Agriculture et l'Horticulture*, *Conferences sur le Jardinage et la Culture des Arbres Fruitiers*, *Jardin Potager* and *Livre de la Ferme*. The last named book is the principal work of his life, all the horticultural matter therein contained having been written by himself. The agricultural paper *Journal de la Ferme* was founded by Mr. Joigneaux, and its character shows that his labors have materially aided the progress of horticulture in the past fifty years.

⁂

Jean Ketten, of the firm, Ketten Bros., Luxembourg, died at the age of 43. Several varieties of roses were introduced by him.

⁂

Ludwig Eberhard Kuntze died May 3. He was manager of the firm, J. C. Schmidt, of Erfurt, and also possessed several floral establishments in various parts of Germany.

⁂

Jacques-Julien Margottin, the world renowned rosarian, died May 13, at Bourg-la-Reine, France, aged 74. Most of his life had been devoted to the cultivation of roses, and he had no superior in this work. Many new varieties were introduced by him, some of his earlier introductions being still widely grown. He was born in Val Saint-Germain, in 1817. When 22 years of age he became connected with the Garden of the Luxembourg. It was here that he first became deeply interested in roses, which was undoubtedly the result of the teachings of Mr. Hardy. In 1859 he finally settled in Bourg-la-Reine, where he resided till the time of his death. Margottin introduced 76 new roses, mostly hybrid remontants. Jules Margottin, introduced in 1853, made him a reputation. Gloire de Margottin, Charles Turner and Duchesse d'Aoste, are among his varieties. In 1878 he received the decoration of the Legion of Honor.

⁂

M. MOENS, one of the most enthusiastic amateur horticulturists of Belgium, died May 19.

⁂

LUDWIG EDLER VON NAGY-BÜKK died September 10, in his 68th year. His name is familiar to many through his contributions to horticultural journals.

⁂

ROBERT PARKER, one of the original founders of the English nurseries of B. S. Williams & Son, Holloway, and later nurseryman at Footing, died January 21, at 65 years of age.

⁂

EMILE PIERRE died October 21. He was the director of the Experiment Gardens at Libreville, Gabon, and introduced many useful vegetables among the natives of the west African coast.

⁂

JAMES T. PRINGLE, for thirteen years gardener at Benton Hall, Northumberland, England, and particularly given to Chrysanthemum culture, died at the age of 42, on the 8th of September.

⁂

EDOUARD DE REGEL died April 27, aged 77 years. He was the founder of *Gartenflora*, and was for many years its director. At the time of his death he was director of the botanic gardens at St. Petersburg.

JOHN ROBERTS, a noted Irish grape grower, died January 23, aged 62.

⁂

M. ROCH-JOLIBOIS, head gardener at the Palais du Luxembourg, died in August. He was deeply interested in orchids, and his collection of cypripediums was particulary interesting. He succeeded in raising many interesting hybrids in the genus.

⁂

STEPHEN ROSS, Hammersmith, England, died January 27 at 60. He was employed by the Hammersmith Board of Works in superintending planting, and previously was 25 years gardener to the Earl of Carnaervon at Highclere.

⁂

CASIMER ROUMEGUÈRE died at Toulouse, at the age of 63 years. He was director of *The Revue Mycologique.*

⁂

HARRY C. ROWAN, a frequent contributor to English horticultural journals, died aged 47 years.

⁂

C. H. SHARMAN, manager of the seed firm of Carter & Co., died September 30, at Perry Hill, England.

⁂

JAMES SMITH, a nurseryman near Matlock, England, died March 29, in his 83d year.

⁂

WILLIAM STEELL, nurseryman at Richmond Surrey, England, died at 78 years of age, on October 3.

⁂

DR. SCHUBELER, director of the botanic gardens of Christiana, Norway, died June 20. His publications on the flora of Norway are his most important works, and an English translation of some of them has appeared under the name of *A Synopsis of the Vegetable Products of Norway.*

⁂

C. SOLIGNAC, a leading horticulturist of Cannes, France, died recently, at the age of 46.

⁂

M. THIBAUT, a prominent horticulturist of France, died early in the year, at the age of 78 years. He was much interested in large flowered pelargoniums when these plants were in general favor, and wrote a small volume on their culture. He alsopaid much attention to orchids.

⁂

JACQUES VIGNERON, a rose grower of Orléans, France, died recently, aged 74 years.

⁂

J. B. WEBER director of the botanic gardens at Dijon, France, died aged 52 years.

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